

# COMPUTERWORLD

## Mainframe anchors IBM open systems plan

BY ROSEMARY HAMILTON  
and JOHANNA AMBROSIO  
CW STAFF

NEW YORK — With the announcement last week of more than 100 large systems products under an Open Enterprise banner, IBM mapped out a plan to revive the mainframe market by placing the machines at the center of an open systems strategy.

"It could be the final step away from IBM having such strong control," said Jack Cooper, chief information officer at Joseph E. Seagram & Sons, Inc. "This could be a whole new chapter."

IBM's open strategy, the culmination of a series of moves toward greater open systems support, was called a solid plan by most observers. Some suggested it is a no-choice gamble that IBM must take to hang on to its leadership role. Longer term, the open systems plan could provide IBM with the kind of high margins it enjoyed through selling proprietary hardware and software. But it gives the firm

better shot at keeping the customers it risked losing by remaining closed, analysts said.

"They finally realized that if they don't want to be cut out of

The announcement package positioned IBM's mainframe as an open server in a corporate network of IBM and non-IBM equipment. IBM is expected to

remain essential in the eyes of users. In addition to the open products introductions, IBM released a number of enhancements for these mainframe functions last week (see stories pages 131-133).

### Open field

Last week's IBM product barrage was highlighted by improved support for other vendors' products

- IBM Information Warehouse will be a framework for user access to IBM and other database managers.
- IBM will offer native mainframe Unix based on the Open Software Foundation's OSF/2.
- Postr will become a standard interface across IBM platforms within two years.
- Nine software companies lined up to support IBM's Distributed Relational Database Architecture.
- Newview's data management system will be replaced by an object-oriented system with open programming interfaces.
- Newview network topology maps and icons will support non-SNA devices.
- IBM will provide loss-based backup for Sun, Apple and Novell devices.



*"I don't believe we can impose our standards on the rest of the world."*

IBM Senior Vice President Carl Costi

the action in the '90s, they have to provide connectivity in a heterogeneous environment," said James Castell, a vice president at Gartner Group, Inc.

continue to promote key attributes of the mainframe — such as security, reliability and high-volume processing — so that its contribution to the enterprise

### New willingness

Some key elements of the open strategy, such as the Information Warehouse framework to provide access to a variety of databases, demonstrated a new level of willingness to work with third-party companies and establish industry standards.

On the network management side, IBM announced an object-oriented data management system that is said to allow Newview to collect configuration and status information from a variety of non-IBM applications and systems. IBM also announced plans to support the Open Software Foundation's still-undefined Distributed Management Environment protocols.

The drawback, is many of the announced software and

Continued on page 133

## 390 closes a troubled first year

BY KIM S. NASH  
CW STAFF



It has been a year since IBM introduced its new-generation mainframes — a tough year.

On top of the usual difficulties in launching a product line, other factors hampered Enterprise System/9000 sales after initial pent-up demand was satisfied, users and analysts said. These included the recession, downsizing and IBM's unprecedented and, by some accounts, unsuccessful hybrid machine scheme.

The large systems market is already in the doldrums. U.S. revenues for all vendors in this sector are expected to grow by only 1.4% annually over the next five years, according to a report from International Data Corp., a market research firm in Framingham, Mass. IDC also said that IBM saw only 3.6% growth in value of shipments between 1989 and 1990.

Continued on page 131

## Compaq price parry

Upgradable Deskpros to take on low-cost comers

BY MICHAEL FITZGERALD  
CW STAFF

HOUSTON — Reacting to a market that seems to want easily upgradable personal computers, Compaq Computer Corp. is set to bring out a line of modular Desktop PCs today at prices sharply reduced from current levels.

Compaq called its pricing aggressive, claiming that in specific products, its prices were as low as half those of IBM and only several hundred dollars more than those of AST Research, Inc. Low-cost competition has been widely cited as the reason for a sharp slowdown in Compaq's

1991 sales. New pricing that puts a 25-MHz Intel Corp. 80386-based machine as low as \$3,099 drew positive, although not effusive, comments from industry observers. Compaq users said they were pleased.

"This indicates they're moving in the right direction," said David R. Korus, PC analyst at Kidder, Peabody & Co. in New York.

William Tauscher, chairman and chief executive officer of Computerland Corp., agreed with Korus, although he added, "I don't know if it's a big enough drop. We'll have to wait and see what happens in the stores."

Continued on page 6

## Apple's corporate campaign fights counterculture past

BY JAMES DALY  
CW STAFF

Apple Computer, Inc. Vice President Roger Heinen was stumping at a Macworld Exposition luncheon last month, earnestly

for the occasion. "I checked.

The sartorial discrepancy underlines the latest corporate balancing act for the \$5 billion company. While aggressively pursuing major corporate accounts, Apple wants to retain the renegade spirit that made it the flag bearer of the technological counterculture. But it is presenting a confusing message to current users and — more importantly — potential users.

"The Mac is a great machine, but when I try to make a pitch to the guys over in finance, they just blank — they think, 'It's those crazy programmers again,'" said Chuck Lasky, director of MIS at Dorr-Oliver, an industrial equipment manufacturer in Milford, Conn.

The image paradox comes at a bad time for Apple, which is working hard to build products

Continued on page 6

### Underwhelming

A Mac attach has yet to strike the majority of corporations with more than 500 employees

Third often overpriced 25,000

Establishments with an IBM PC	81%
Establishments with a Compaq	49%
Establishments with an Apple	34%

Source: Computer Intelligence/Intervue

wooding corporate high rollers. Despite his businesslike demeanor, Heinen dressed as if he were about to wash his car: T-shirt, jeans and sneakers. A blue-suited senior Apple executive who followed Heinen onto the podium could not resist a barb. "At least someone dressed up

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Routers are set to push the 1G bit/sec. barrier. Page 130.

Word processing wars: Signature on hold; Wordstar does Windows. Page 130.

Computer-based micro marketing puts product pitches on a personal level. Page 93.

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## Quotable

"This is not a way for us to sell mainframes. This is not a last-gasp effort."

WILLIAM GRAEB  
IBM

On IBM's announcement of a move into high-end systems strategy. See story page 1.

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# EXECUTIVE BRIEFING

■ IBM made a quantum leap out of its proprietary past, pledging 100-plus large systems products to secure its open systems future: Among them 25 new and 14 enhanced offerings under the AD/Cycle banner; Imageplus/2, the client side of IBM's document-imaging line; and the Information Warehouse multiple database access framework. While some key software and networking offerings won't arrive until 1992, users hailed the sweeping announcement as a strategic compass to guide their advances into an open world in which IBM plans to be a key player. Pages 1, 131-133.

■ IBM to users: Move over. After a year of linking the two mainframe families in order to ease migration, IBM sped the end of much of the 3090 line and spurred users to the ES/9000 platform. Included among the carrots and sticks: seven new ES/9000 models, from air-cooled high-end to water-cooled low-end; upgrade deals; enhancements such as Escon extensions available only for the ES/9000; and a Dec. 10 curtain on 3090 E and S sales and upgrades. Page 131.

■ Compaq responds to user clamor for upgradable PCs at affordable prices with a new line of modular Deskpro models that feature easy upgrade paths and scaled-down prices. Page 1.

■ IS managers coping with outsourced operations will find several changes to their roles. The most significant difference is that they now manage contracts rather than people. Page 113.

■ Last week's Downstream Expo brought together IS managers who focused less on the technology and more on the shifts in IS functions involved in transplanting mainframe applications to PCs. Page 4.

■ Unix System V takes a giant step toward security as Unix System Laboratories moves to phase out "super-user" — the password that confers all system privileges on its users. Page 29.

■ CASE, with its reliance on business analysis, is forcing a cultural change in IS departments that managers can't ignore. Developers must move from a pure engineering bent to take on the investigative, analytical skills of scientists. The quality of the software design depends on it. Page 103.

■ Blue jeans and business suits signal more than chas-

ing fashion at Apple Computer. The Macintosh maker's bid to be taken seriously by commercial power users is in line with its urge to hang on to entrepreneurial informality — and some people believe the battle is stalling the creative verve that put Apple on the map. Page 1.

■ Retirement planning is important for PCs, too. Older desktop machines will deliver value longer if their later years are planned and tracked. Page 124.

■ On site this week: An integrated network is about to tame the sprawl of computers and LANs at Children's Hospital in Pittsburgh. Expected benefits: better access, reduced records redundancy and better use of resources. Page 81. For \$10 million, Saks Fifth Avenue is treating its 47 stores to point-of-sale packages from Siemens/Nixdorf Information Systems. All the better and faster to serve you with Saks' upscale wares — and coming in time for the holidays. Page 29. Ford Motor Co. designed the mainframe-based, menu-driven Virtual Interface Engineering Window — VIEW — to give 150 end users in its Car Product Development Division simultaneous access to multiple sources of data. Page 33. San Diego Gas & Electric Co. has a workstation-based, networked system in the works to replace a minicomputer-based system. Page 50.

## The 5th Wave



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# User concerns top IS agenda

IS managers struggle to bring development in line with end-user needs

BY ELISABETH HOWITT  
CW STAFF

TARRYTOWN, N.Y. — The question is, does moving applications closer to the users assure in those users a sense of responsibility for development and maintenance of that program?

The answer, according to The Yankee Group in Boston, is not necessarily.

As the ratio of personal computers to employees approaches 1-to-1, information systems departments are struggling to reorient their software development and buying strategies more closely to the end user, said The Yankee Group managing director Howard Anderson.

According to a report published by the firm, applications development is what IS managers expect to spend the most time worrying about during the next five years.

The report, which was distributed at The Yankee Group's conference on networked computing, describes some of the chief software development issues and priorities of 128 IS executives surveyed this summer.

Several key findings emerged from the study:

- User involvement is the most critical factor in the success of a software development project.
- However, users are by far the least controllable element of software development.
- Cost containment is the most important overall concern in IS software development strategy; business process redesign is second; new technologies are third.
- The advent of network computing adds a new dimension of problems to software development.

Meanwhile, growing hordes of networked PC users are demanding more business applications faster, while IS struggles to maintain some semblance of order on a tightening budget, Anderson said.

He suggested one way to

manage and maintenance, respondents said. Chief among them are incompatibility of different network environments; lack of tools for accessing information across the organization; and inability to use existing software on the new environments.

He suggested one way to

solve this dilemma is innovation without increased head count or moving applications development to individual departments or work groups.

The audience poked holes in this scenario, however. "No one [in top management] is fooled when you move heads from central IS to user software development," one IS manager said. He said budget constraints are forcing his group to concentrate on major projects rather than user requests.

When Georgia-Pacific Corp. migrated applications down from IBM mainframes to Application System/400s on a Token Ring network, the IS department turned system maintenance over to the user groups, according to Paul Perloff, the Atlanta-based company's chief information officer. However, he added, IS held on to responsibility for the applications. While users can develop ad hoc database queries, "none build applications from scratch," he said.

Georgia-Pacific's users do not seem atypical. Some 85% of IS managers responding to The Yankee Group's survey said they expect end users to be developing more than 25% of their firm's software by the year 2000. On the other hand, 19% put the date back to "when hell freezes over."

## On the one hand . . .

IS managers focus on costs and technologies when developing software but justify projects by their business impact

How important are the following to your software development strategy?

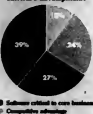
	Mean
Cost containment	4.13
Business process redesign	4.12
New technologies	4.07
Enterprise integration	3.86
Open systems	3.55
Your make/buy philosophy	3.48
Reverse engineering	3.19
Downsizing	3.13
Outsourcing your development	2.38

Based on a scale of one to five where five is very important

Respondent base: 128

Source: The Yankee Group

What is the most powerful justification of your IS software development?



• Software critical to core business  
• Competitive advantage  
• Impact on company's bottom line  
• Other  
Based on responses/total of 204  
Multiple responses allowed

CW Chart: Michael Sigges

## Downsizing focus shifts to impact IS function

BY JIM NASH  
CW STAFF

ANAHEIM, Calif. — Whether it is called downsizing or rightsizing, the process that information systems departments are going through is likely to change their function in life drastically.

At last week's Downsizing Expo here, discussions increasingly focused on how and why to triumph: maintain, spend the resources to personal computer networks. Less time was spent on technology, more on shifting IS functions.

Ted Klein, president of Boston Systems Group, a market research firm in Boston, used the example of McDonald's Corp., which has turned its focus away from making its own hamburgers toward selling business plans to restaurateurs, to point out that IS departments must standardize the process of running applications in numerous groups and departments companywide.

Where that kind of top-down

management is occurring, systems personnel said, downsizing is orderly and healthy. Some others, however, said they doubt the model is practical for their office. Klein said he advocates a multisite plan that starts with a thorough survey of the software and hardware already in the workplace.

Throughout the process, he said, IS managers at all levels and, in relevant cases, even end users must be involved in the process of deciding which resources and services can be farmed out to networks.

Such a framework has been put into place nationwide over the past two years at the U.S. Department of Veterans Affairs, said Gerhart Thompson, Thompson, a computer programmer at the VA, said the organization has adopted a downsizing policy that closely resembles Klein's proposal.

"We have come to the conclusion that we can do more with less," Thompson said, referring

to the increasing capacity of PCs. Washington, D.C., officials inventory systems at each VA hospital, he said, and have formed an overall strategy for what can be downsized and how.

Today, he said, the system administrator at each hospital consults with VA officials in Washington on a project before it is begun but then achieves the autonomy afforded by linked networks.

Colleen Lowry, a technical specialist at Union Bank in Los Angeles, said the bank had watched as customized computing grew. "Applications in some departments were ad hoc," Lowry said. "Management then said, 'Let's get some controls over what's happening.'"

Curt Schuyler, a systems manager at the bank, said it was a natural step to consolidate applications control and systematically move mainframe applications down. Schuyler said the process is likely to occur naturally at any company forced to use computer systems at peak efficiency for competitive advantage.

Sometimes, however, the PC ethic — don't write for IS — is the most acceptable method, according to Gerry Kline, section manager at institutional data

systems at the Jet Propulsion Laboratory in Pasadena, Calif. Kline said senior IS management is often distant from discussions of downsizing. "Some don't see the potential" in downsizing, he said. "They are swimming upstream."

Most often, Kline said, moving applications from the mainframe is a committee's or department's decision.

It works at his firm because "we have good people in the right places who know what they are doing," he said.

## CORRECTIONS

A story about Lawson Associates, Inc. and its move toward Unix (CW, Aug. 5) may have given the erroneous impression that Unisys Corp. mainframe applications would no longer be enhanced or supported. Lawson officials said that only the firm's Universe suite of mainframe development tools would no longer be enhanced.

Apple Computer, Inc.'s personal computer market share is estimated to have slipped from 15% to 10% in the past three years, not in the next three years (CW, Aug. 12).

## COMPUTERWORLD

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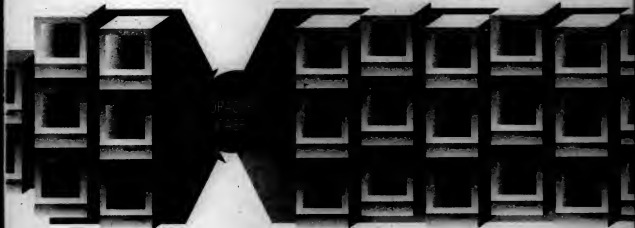
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# Upgradable PCs hot, but users sitting tight

BY MICHAEL FITZGERALD  
CJW

Upgradable personal computers are hitting the market in volume, but users appear more interested in having the option to upgrade than in actually taking the step.

This week, Compaq Computer Corp. joins companies such as IBM, AST Research, Inc. and Tandem Corp. in offering an upgradable machine where the microprocessor, and in some cases, other parts, can be easily upgraded (see story page 1).

Most users contacted said the option of upgrading is important to them, but they will not necessarily pay a large premium for it.

Still, "there seems to be a growing interest in upgradability," said Julian Horwich, executive director of the Corporate Association of Microcomputer Professionals in Northbrook, Ill.

Users cited reasons that included investment protection, the high cost of new machines and the dwindling number of PC "have-nots" within corporations as making it more difficult to justify buying new machines. They said it is becoming harder to justify a more powerful machine when there are fewer nonusers to absorb older systems.

Of those with easily upgradable machines, few have actually

used the upgrade. "We have not upgraded, but it's nice to know down the road we'll be able to upgrade," said Enrique Crespo Jr., corporate manager of end-user computing at The Torrington Co. in Torrington, Conn.

One that has opted to upgrade is Reader's Digest Association, Inc. in Pleasantville, N.Y. Reader's Digest had recently upgraded 13 machines in its training room and saved close to \$60,000 over the cost of purchasing new machines, according to Vane Lashua, applications development manager at Reader's Digest.

Lashua said the firm buys IBM Personal System/2s "in part because we felt the Micro Channel Architecture would let us upgrade processors easily."

Richard Zwetschenbaum, senior hardware analyst at International Data Corp. in Framingham, Mass., said his company projects that the number of shipments of upgradable, 32-bit PCs based on Intel Corp. chips will move from 7% in 1990 to 12% in 1992.

Dealers contacted said their customers are not clamoring for upgrades.

"I see people wanting it, but I don't see them [exhibiting] a lot of demand for it," said Terry Camit, general manager at a Walcom dealership in Wichita, Kan.

## Compaq

FROM PAGE 1

"If that pricing holds, these units are very attractively priced," said Rich Gius, manager of ValueLink and technology services at Baxter Healthcare Corp. in McGaw Park, Ill.

Gius also said he was pleased with Compaq's modularity. Baxter will likely want to upgrade its displays as graphical user interfaces become more prevalent and video standards change, he added.

"The pricing seems to me extremely appealing, off the top of my head," echoed Enrique Crespo Jr., corporate manager of end-user computing at The Torrington Co. Crespo called the upgradable aspect of the announcement "great — the best news."

Several users contacted dis-

**Pricing to move**  
Compaq is looking to fight inexpensive competitors with its upgradable Deskpros

Model	Storage	Price
Deskpro 386/25M	120M bytes	\$3,999
Deskpro 486/16M	120M bytes	\$4,999
Deskpro 486/25M	120M bytes	\$4,500
Deskpro 486/33M	240M bytes	\$7,199

All models feature 4MB bytes of RAM, four expansion slots and Advanced Value Graphics Array.

Source: Compaq Computer Corp.



The Deskpro 486 family's processor, expansion memory board, display controller and bus are modular and can be upgraded.

missed upgradability as unimportant. Compaq's Lorie Strong, vice president of product marketing, acknowledged that Compaq does not expect many users to upgrade (see story at left).

The new Deskpro features two new chips from Intel (see story below) — 16-MHz and 25-MHz versions of the 486SX — and also runs on Intel's 25-MHz 80386 processor and the 33-MHz 486DX.

There are three models based on each of the four chips. The entry-level models — the Deskpro 386/25M, 486S/16M and 486S/25M — are available either with no hard drive or configured with a 60M- or 120M-byte hard disk, while the Deskpro 486/33M comes either with no hard drive or with a 120M- or 340M-byte hard disk.

Pricing ranges from \$3,999 on the low end to \$7,199 for the most expensive 486/33.

Standard configuration for the entire family has 4MB bytes of random-access memory, expandable to 64MB bytes of RAM, and offers Compaq's Advanced Video Graphics Array display controller. The processor, expansion memory board, display controller and bus are all modular and can be upgraded, as can the I/O board. All models have the Extended Industry Standard Architecture bus.

A Compaq spokesman confirmed that the firm will not release new machine designs with the XT/AT bus but will come out with follow-on to current products that keep the AT bus.

Compaq expects the new line will take some sales away from current product lines. It will also lower prices on its existing 386/25E line by more than 20%, to \$2,999 for a base model and \$3,999 for one with a 120M-byte hard drive.

## Apple

FROM PAGE 1

targeted at demanding corporate customers. At next month's Comdex/Fall '91, for instance, Apple will unveil two high-powered Macintoshes, including the company's first file server. In July, Apple hooked up with former archrival and corporate mainstay IBM to announce a wide-ranging joint technology development pact.

### Neutral fit

On paper, Apple already seems like a natural corporate fit. Like IBM, it provides hardware and networking solutions; the Microsoft Corp., it offers systems software and desktop applications; and the San Micro-systems, Inc., it offers development tools and Unix.

But when it comes to taking a bite out of that old Apple mystique, some folks gag. "Some people look at what the [Apple] image is as opposed to what the product can do for them," said Mark Sheppa, an Apple fan who works as a senior analyst at TRW Corp. in Cleveland.

Others said the mixed signals emanate from Apple itself. "I

don't understand what Apple stands for these days — I don't think they do either," said Sheldon Laube, director of information and technology at Price Waterhouse in New York.

What does Apple want to be? At one point, the firm was known as a premier technological innovator, but potential customers said their reputation has long since evaporated.

"Apple hasn't had a truly innovative product out in years but instead concentrates on incrementally advancing old offerings," said Charles Darnell, senior vice president at Litchia Lighting in Conyers, Ga.

Microsoft's Windows 3.0, which given users of IBM-compatible computers the point-and-click icon-based screen appearance the Macintosh pioneered, made the way toward closing the usability gap.

The yearlong delay in releasing its next-generation System 7.0 operating system also caused damage to Apple's standing. "Apple's products just don't seem to last anymore, so it's often hard to provide a convincing argument to buy them," said Jim Grisham, MIS manager at Tremco, Inc., a chemicals manufacturer based in Besenwood,

Ohio. "I'd like to see less emphasis on the gimmicks and more on products."

### Falling behind

Apple now lags behind the industry in important areas such as laptops, workstations and pen-based computing. Users said that instead of trying to point to the past, the firm must be making a better effort to more actively stay on the leading edge of innovation.

Chairman John Sculley blamed a lot of the problem on corporate missteps at Apple. "We've been looking inward too much," he said. Moreover, some

Apple employees also said they feel the company is losing its original creative vision and falling prey to "MBA types" in middle management who are trying to turn the firm into a mere corporate environment. The pending IBM pact has intensified this discord.

Analysts and users said the company could win corporate users and rethink the old executive by capitalizing on its reputation for creating user-friendly products. But it has to move soon. "I'm still an Apple fan," Sheppa said. "But now it takes me a little longer to explain why."

## Chips files piracy charges

Chips and Technologies, Inc. last week asked the federal government for an injunction against four computer component makers that it alleges are pirating patented Chips technology.

The San Jose, Calif.-based company filed a complaint with the International Trade Commission charging Opti Computer

Inc., Elite Microsystems, Etex Microsystems and San Electronics with patent infringement.

At issue is the alleged unauthorized use of Chips' technology called Page-Interleaved Memory Access and Addressing Multiple Types of Memory Devices.

JIM NASH

## Intel unveils low-speed 486s

Intel Corp. last week announced a pair of lower speed 486SX chips. One of them, the 16-MHz version, is aimed at bringing personal computer vendors and end users up from the 80386 chip product line to the 486 family.

The Santa Clara, Calif.-based semiconductor maker also announced a 25-MHz version of the 486. Both microprocessors are part of Intel's strategy of bringing chips with a multitude of prices and performance standards. Intel said the 25-MHz 486S performs 25% faster than the existing 20-MHz 486S.

Dean McCarron, an analyst at

In-stat, Inc., a semiconductor market research firm in Scottsdale, Ariz., said he suspects that the 16-MHz chip is intended to "squeeze" Intel's 386DX out of the market.

McCarron said the new chip would offer better performance than the 80386 without a big price jump. If the market moves up from the 80386, Intel wins because it has no direct competition for the 486S, he said.

The 16-MHz chip costs \$214 in quantities of 1,000. The 25-MHz microprocessor sells for \$333. Both are available now.

JIM NASH

## Senate passes computer bill

BY GARY H. ANTHES  
CHICAGO

WASHINGTON, D.C. — The U.S. Senate last week approved a measure that would establish a five-year, \$2 billion federal high-performance computing and networking program.

The program, spelled out in a bill written by Sen. Albert Gore Jr. (D-Tenn.), would sponsor development of a National Research and Education Network (NREN) with a bandwidth of more than 1G bit/sec. and large-scale parallel computers operating at 1 trillion operations per second. It also calls for establishment of an "information infrastructure" of nationally distributed databases and stepped-up funding for basic research and education.

The legislation authorizes an additional \$1.07 billion in federal spending on high-performance computing and networking, nearly doubling current outlays. It gives primary funding responsibility for the NREN to the National Science Foundation (NSF), which has been beefing up its giant NSFnet by boosting the capacity of its backbone to 45M bit/sec.

### Let the research begin

The NSF has already begun research intended to lead to the 1G bit/sec. NREN by funding five high-performance network test beds, which are being put together by teams of universities and telecommunications companies. Although it is not yet clear just how the NREN will evolve, it is likely to emerge first as the next generation of NSFnet.

The NREN was originally thought of as a tool for university and government scientists — essentially the community served by the NSFnet — but it is increasingly being viewed as a public utility that would enable widespread access by commercial interests for high-speed data applications such as videoconferencing.

The Gore bill also calls for research into advanced software that would enable the establishment of vast distributed digital libraries, accessible by the NREN and holding everything from high school test books to supercomputer output for research collaboration.

The legislation caps 12 years of effort by Gore, who has long dreamed of a national communications infrastructure snaking the interstate highway system, which was sponsored by legislation introduced in the Senate by his father in the 1950s. "The advanced computing technology developed by this bill will help address global warming, clean up the environment, provide more cost-effective health care, improve education for our children and improve the way we use natural resources," Gore said.

A similar bill was approved by the U.S. House of Representatives in July, and members of the House and Senate now meet to resolve differences.

One thorny issue to be ironed out is the fate of a controversial "buy-American" provision in the House bill — but not the Senate version — added by lawmakers who said tax dollars for the program should not subsidize technology development outside the U.S.

## Burden assumes IS helm for Freddie Mac

BY KIM S. NASH  
CHICAGO

MCLEAN, Va. — High-profile information systems executive Laurence Burden — who has been distinctly low profile since resigning from S. C. Johnson & Son, Inc. in March — has resurfaced at Federal Home Loan Mortgage Corp., or Freddie Mac, based here.

As senior vice president for information systems and services, Burden's first order of business will be "to strengthen the way we serve our customers," he said. He would not outline specific plans but said Freddie Mac will probably start a

business re-engineering program shortly.

Burden's experience with IS redevelopment during his seven years at Firestone Tire & Rubber Co. "makes him ideal for the position," said David Glenn, Freddie Mac's chief operating officer.

"I'm not dealing with a turnaround situation here, like at Firestone, but we want to make some changes," Burden said. He will report to Glenn and oversee an IS staff of 400 people from nine technology departments.



Burden Changes for Freddie Mac

The mortgage lender, which finances one in every eight homes in the U.S., recently started a 24-hour, toll-free help line called Freddie Answers, which IS helped set up. Customers — individual homeowners and institutional investors — can get answers about mortgage rates, policies, interest rates and other financial topics via a pre-recorded Touch-Tone menu.

Burden would not comment last week on why he left Johnson War other than to say he left for personal reasons.

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## NEWS SHORTS

### Freebie 1-2-3 on DEC Unix boxes

Lotus Development Corp.'s 1-2-3 spreadsheet will come packaged free with Digital Equipment Corp.'s Unibus-based Decsystem and Decstation lines for the next six months, DEC announced last week. Beginning next month, DEC will bundle Lotus' 1-2-3 for Ultrix with all of its end-user instruction set computing (RISC) platforms. Once the offer expires, a one-user license will cost \$695. Lotus' 1-2-3 on Decstations and Decsystems will support Decwindows, multitasking, background processing, virtually unlimited memory, networking and the Network File System.

### NCR shareholders OK AT&T deal

NCR Corp. shareholders resoundingly approved the merger with AT&T at a special meeting in Dayton, Ohio, last week. Preliminary results indicated that more than 99% of the shares were cast in favor of the merger. NCR Chairman and Chief Executive Officer Charles E. Ealey Jr., who originally greeted AT&T's overture to buy the 107-year-old firm with undue hostility, spoke at the meeting in warm and generous tones about AT&T. AT&T's "product line, its customer base and, most of all, the quality of its people will provide an impressive contribution to NCR's growth," Ealey said.

### Vendors seek storage standards

A cadre of vendors trying to focus the direction of the burgeoning mobile computer market will join with an international trade group today to announce standard specifications for mass storage systems and communications products designed for handheld, palm-top and pen-based computers. Hewlett-Packard, Intel Corp. and Mitsubishi Electronic Corp. are among the core that's drawn from joining with the Personal Computer Memory Card International Association to discuss the standard for memory cards for mobile computers.

### NCR stung by \$30 million verdict

Last month, NCR was informed of a \$30 million judgment against it, dating from a 14-year-old lawsuit filed by two furniture store chains. Both chains sued NCR in 1977 in federal court in Brownsville, Texas, alleging that their NCR hardware and software did not perform acceptably. The \$5 million judgment was tripled under the Texas Deceptive Trade Practices Act, and the court also assessed NCR \$15 million in interest. Analysts said the award was one of the largest ever against a computer manufacturer. NCR has said it plans to appeal.

### Market data firms merging

Two pioneering firms in the field of computerized demographic and marketing information, Claritas Corp. and National Planning Data Corp., are planning to merge operations by year's end. Both firms are subsidiaries of the privately held VNU Business Information Services, Inc., but they had been competing against each other with overlapping products for targeted marketing. The combined subsidiary, to be named Claritas/NPDC, will "create one streamlined product line," a spokesman said.

### Poor results expected from Intel

Intel last week warned that third-quarter results for the next week will be disappointing. Citing weak demand and low pricing for several semiconductor lines, the firm said revenue and net income will fall below expectations. Earnings programable read-only memory, microcontrollers and PCs will lead the dive, Intel said. Growth for new 80386SL and i486 chips is expected to balance shortfalls in other semiconductors.

### Graphics accelerator from Sun

Sun Microsystems, Inc. is offering a single board with a RISC CPU, a graphics accelerator and networking for use in non-Sun systems. The \$9,000 board, called Sparcengine IPIX, is aimed at embedded uses such as military controllers and token ring network controllers, according to Ken Witn, product manager.

More news shorts on page 130

## Codex looks to close local-, wide-area gap

BY JOANIE M. WEXLER  
COWLEY

MANSFIELD, Mass. — Wide-area networking vendor Codex Corp. blurred the lines of demarcation between local- and wide-area networks last week with some hefty network management enhancements to its 9600 series management platform.

The 9600, which is reportedly installed in more than 300 companies worldwide, now manages some LAN equipment in addition to Codex's and several third-party vendors' WAN devices. The move addresses a trend toward blending isolated LANs and WANs into company-wide networks that require a cohesive form of management.

The beefed-up 9600 will allow Codex customers running common LAN devices to manage them alongside their telecommunications equipment. The initial implementation supports Cisco Systems, Inc. and Proteon, Inc. routers and Syn-

tics Communications, Inc. wiring hubs. Two beta-test users said the LAN integration will be of interest to them shortly.

"As a networking manager, you have to be prepared to support any-to-any communications," said Henry Thayer, director of data communications at Blue Cross/Blue Shield of Rhode Island in Providence. "This will be the issue of the '90s."

### The road to routers

"We will move to routers within six to 12 months," said Ed Wiest, senior data communications analyst at Executive Information Systems, Inc. in Durban, Conn. "We would be forced to go to another vendor or have Codex build something specifically for us at a higher cost" if Codex had not made the LAN move.

In addition to supporting the Cisco, Proteon and Synetics equipment, Codex said it can add management of any other LAN device running the Simple Network Management Protocol

(SNMP) on a customer-specified basis. SNMP-manageable LAN devices are currently available from about 120 vendors.

The 9600 will now run on a Hewlett-Packard Co./Apollo Series 9000 Model 425 Unix workstation for a reported four- to fivefold increase in processing power over the existing Apollo DN3500 platform.

Wiest said he will use the 9600 because it represents "an infusion of power to increase throughput for statistics collection," a key to balancing network traffic loads.

Jerry McDowell, an analyst at market research firm Dataquest, Inc. in San Jose, Calif., commented, "Though I like the direction Codex is taking with LAN support... I'm in total disagreement with the platform they've chosen. Everybody else's management systems run on Sun [Microsystems, Inc.] workstations. A user running multiple management systems would have to have multiple stations."

But Wiest and Thayer said they particularly like a new 9600 feature that allows them to dial in from a remote location and manage the network. "This is a real advantage because we have to support people nationwide" in different time zones, Wiest said.

## DEC cuts prices on memory options

BY MARYFRAN JOHNSON  
COWLEY

MAYNARD, Mass. — In yet another competitive move to improve the performance of its VAX and Unix-based systems, Digital Equipment Corp. last week reduced memory option prices by as much as 50% on certain products.

Tom Frederick, business manager for DEC's memory

group, said in-house testing showed that doubling memory from 64M bytes to 128M bytes on a VAX 6000 Model 500 can allow support for three times as many A4-11 users with no degradation in response time.

The price cuts, ranging from 12% to 50%, are in effect for memory boards on VAX 6000s, VAX 4000s, Microvaxes, Vaxstation 3100s and Unix-based Decsystem 3100, 5000, 5100

and 5500 systems. Some examples of the new prices follow:

- VAX 6000, with 64M bytes of memory, cut 19% to \$54,000. The 128M-byte module was \$129,000.
- VAX 4000 Model 300, with 64M bytes of memory, cut 40% to \$30,400. For VAX 4000 Model 200s and Microvax 3000 systems, memory is 25% cheaper at \$3,600 for 8M bytes and \$7,300 for 16M bytes.

## Intel muscled into networking market

BY JIM NASH  
COWLEY

Believing it can spur sales of its personal computers and components by increasing confidence in networks, Intel Corp. has staked its multibillion-dollar foot in the PC networking door.

However, industry observers say they will wait for Intel to prove itself in the bitterly contested networking market before pronouncing it a serious player.

The Santa Clara, Calif.-based semiconductor maker last week introduced a line of network adapters as well as analyzers and monitors due this fall [CW, Sept. 9]. Andrew Grove, Intel's chief executive officer, said the company made the move believing that networking will "be the grease" that sustains or acceler-

ates PC growth.

Specifically, Intel announced the immediate availability of Etherpress and Tokenpress, two lines of automatically configuring adapter boards. The 16-bit version of Etherpress will support most of the major cabling media and network operating systems. Intel will go head-to-head with 3Com Corp., the leading maker of adapter boards.

### Product rollouts

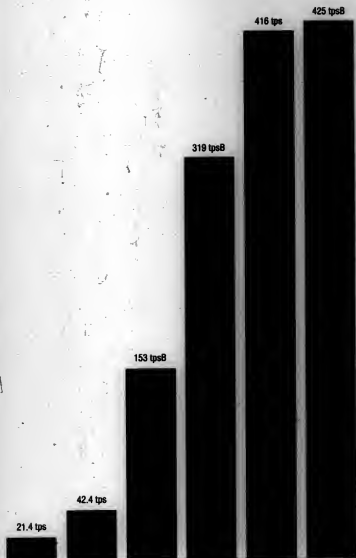
Intel also announced three new network monitors and analyzers: Netlight Sentry, Analyst and Monitor. All three are due this month. A spokesman for the company said the products will bring network monitoring and analyzing down to the workstation level. In this, Intel may be one step ahead of the market.

Most current products stop

short of looking into PCs to gauge their performance and inventory their software and memory. However, Novell, Inc. is now demonstrating management tools that do this with a graphical user interface, something Intel lacks.

Observers said even if Intel's products only tread water in the market, they will force competitors to try to outrun the firm's massive research budget.

Intel currently licenses an Ethernet analyzer-monitor to Calbeston Systems, Inc. Formerly known within Intel as the EM100, the product has heavily influenced Netlight Sentry. Analyst and Monitor have both been augmented with technology gained last May, when Intel bought the assets of LAN Systems, Inc., a New York-based network integrator.



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## Latest UPS data center: High tech on delivery

AT&T teleconferencing equipment lets IS staff conduct on-line meetings across country

BY KIM S. NASH  
OF STAFF

MAHWAH, N.J. — United Parcel Service, Inc.'s new, built-from-scratch \$200 million data center opened here last week, outfitted with technologies not available at the old IS headquarters, 10 miles away in Paramus, N.J.

With teleconferencing equipment from AT&T, the information systems staff here will now be able to conduct on-line meetings with business executives in UPS' Greenwich, Conn., headquarters

and Louisville, Ky., distribution plant.

UPS will keep its Paramus facility running because the firm will need two data centers when the holiday rush starts, said Steve Heit, IS planning manager.

Each site now handles half the company's major applications, but during the two-day spike in deliveries right before Christmas, Heit said, he plans to shift back-office applications such as billing and payroll to the two IBM 3090 mainframes in Paramus.

This will free Mahwah's one 3090 and one new mainframe, an IBM Enterprise

System/9000, for domestic and international package tracking.

UPS, which won a *Computerworld* Sosisheon Award in the transportation category this year, moved 2.9 billion packages and documents through 180 countries last year, bringing in \$13.6 billion in revenue for 1990.

"We decided to build [the new center] rather than buy one so we could put in all the features we wanted," Heit said.

It houses \$100 million worth of new and existing computer equipment and cost UPS another \$100 million in building

and land development costs, according to Heit, who is in charge of stocking the facility.

All cubicles were prewired for telecommunications, videoconferencing and local-area network connections. "We worked out any new wiring when we put together different groups of people to work on different projects," he said.

The new facility uses two utility companies to avoid downtime in case of power outages. Similarly, UPS signed with two long-distance offices, so telecommunications failures are less likely to affect business.

Between 1,600 and 1,700 applications development and support people will work at the new center, most coming from the old site.

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Michael L. Sullivan-Trainor, Senior Editor, Computerworld, in the March 25, 1991 issue

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## Douglas Aircraft seeks integrator

BY ELLIS BOOKER  
OF STAFF

LONG BEACH, Calif. — Within weeks, Douglas Aircraft Co. will pick an information systems partner for its enormous MD-12 aircraft project.

The choice is between Electronic Data Systems Corp. and Digital Equipment Corp., whose proposals beat out those of Andersen Consulting and IBM, according to sources close to the companies.

A spokesman for Douglas Aircraft, a division of St. Louis-based McDonnell Douglas Corp., declined to comment on the ongoing selection process. Spokesmen from EDS and EDS also declined. The scope of the project alone will make its IS component vital. The MD-12, Douglas' next-generation commercial jet aircraft as a competitor to the Boeing Co.'s 747, will cost \$3 billion to \$4 billion in start-up costs and will involve thousands of supplier companies worldwide.

It will be up to the automated systems integrator — Douglas' term — to produce and manage the logistics, distribution, design and financial-tracking systems, as well as the information network needed to coordinate the activities of thousands of subsystems and companies, ensuring that the pieces of the plane arrive on schedule for timely assembly. Over time, said an executive close to the negotiations who asked to remain anonymous, the outsourcing contract could be worth some \$150 million.

But the IS deal comes with an unorthodox financial structure. Douglas plans to make its systems partner share the capital risk, as it will do with a select number of the MD-12 subsystem suppliers.

"If this airplane doesn't get off the ground, [the partners] are the investment," said Daniel Appleton, chairman and chief executive officer of consulting firm D. Appleton Co. in Manhattan Beach, Calif.

Some outside observers said they think EDS has the inside track on the bid, given that the firm is about to close the acquisition of McDonnell Douglas' IS subsidiary, McDonnell Douglas Systems Integration Co. (CWI, Sept. 9).

But DEC is the dominant computer vendor for McDonnell Douglas, which in turn ranks among DEC's major accounts.

Douglas plans to complete its business plan for the MD-12 by the end of October.

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# Printer blitz adds colors to Xerox world

BY CAROL HILDEBRAND  
OF STAFF

Xerox Corp. reinforced its big-gun printer strength and also took aim at the desktop with a barrage of printers last week.

The announcement, Xerox's largest effort to date, showcased five printers running the gamut from a 135 page/min. production printer to desktop models positioned against Hewlett-Packard Co.'s market-dominant LaserJet series. It also included a digital color copier, the Xerox 5775, marking the company's first en-

try into that market.

Although analysts called Xerox's production offerings very strong — noting that the two highest speed printers should reinforce Xerox's position in the data center arena — they were not as sanguine about the desktop choice.

"Xerox doesn't have much cachet — Hewlett-Packard is that for the desktop," said Brandon Nordin, an analyst at BIS Strategic Decisions in Norwell, Mass.

The standard of the group was the 4850, a 50 page/min. la-

ser printer that can print both black and a choice of red, green or blue in the same pass through the printer.

The box will sell at the same price as Xerox's comparable monochrome unit — \$140,500 — an aggressive pricing move that analysts said would work to Xerox's advantage. "Coming out with color at the same price as monochrome makes it difficult [for others] to compete on a level playing field," Nordin said.

The announcement also included the following:

- The Xerox 4135, a 135-page/

min. laser printer that uses the same engine as Xerox's Docu-tech multicolor device. It costs \$356,000.

- The Xerox 4235, a 35-page/min. laser printer running at 300 dot/in. With an Adobe Systems, Inc. Postscript-compatible page description language and ties to the host, analysts said it could be useful in serving work groups and local-area networks.

- The Xerox 4213, a duplex desktop model that prints at 13 page/min. The box is compatible with both Postscript and HP's Printer Control Language.

As a case in point, he cited the recent Federal Trade Commission decision to slap punitive tariffs on several Japanese flat-panel display makers accused of "dumping" on the U.S. market. This was a moral victory and helped a handful of U.S. screen makers but elicited howls of protest from other AEA members, who argued that the high-priced screens would make their finished computer products not competitive with Japanese systems.

On domestic public policy, Gilbertson said, the AEA supports a reduction of the capital gains tax for investment in research and development.

In addition, the trade group supports a lessening of the anti-trust restrictions on joint manufacturing and marketing, which prevent consortia of U.S. technology firms from "taking good engineering ideas and getting them to market," Gilbertson said.

**T**HE AEA SAID it believes the U.S. electronics industry's worldwide market share has fallen from 65% to 50% in the last five years.

However, the diversity of the AEA's 3,400 member companies can make consensus on trade a problem, Gilbertson acknowledged.

believes the U.S. industry's worldwide market share has fallen from 65% to 50% in the last five years and estimated that 19% of the nation's 200 largest firms are losing money today. In the first quarter — for the first time in history — the U.S. electronics industry's sales dropped from those logged in the prior year's comparable period, falling 1.2% to \$70 billion.

**Improvement plans**  
In an effort to reverse these trends, Gilbertson said, he plans to continue the AEA agenda set by his predecessor, outgoing AEA Chairman and Motorola, Inc. President and Chief Operating Officer Gary Tooker.

That plan includes an emphasis on manufacturing and workforce quality and ongoing advo-

cacy for changes in those tax and trade laws that the AEA said it believes inhibit investment or put U.S. firms at a disadvantage.

## AEA head takes charge of sliding industry

Electronics group leader outlines growth problems and possible solutions

BY ELLIS BOOKER  
OF STAFF

CHICAGO — Ominous signals indicate that the U.S. electronics industry is still in trouble, said Robert G. Gilbertson, who at last week's board of directors meeting here was voted to head up the American Electronics Association (AEA).

"Some say, 'So what?' since the industry is growing faster than GNP and manufacturing in general," said Gilbertson, who is president and chief executive officer of Data Switch Corp. in Shelton, Conn.

But the larger reality, he said, is that the industry's rate of growth, return on investment and worldwide market share are all dropping.

For example, the AEA said it

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COMPUTERWORLD

## RS/6000 gets disk mirroring

BY MARYFRAN JOHNSON  
OF STAFF

WALTHAM, Mass. — Camdex Corp. last week unveiled a mirrored disk system and three new drives for IBM's RISC System/6000, grabbing the reins from IBM on leading-edge storage products for its Unix-based workstation/server line.

"Mirrored disks are a first for the RS/6000, but IBM will soon announce mirrored devices as well," said Nili Young, an analyst at Meta Group, Inc. in Westport, Conn. "The Camdex drive itself is a very good concept, so they'll have good success with it until IBM catches up."

### High security

The Certainty 6200-MD mirrored disk array subsystem gives RS/6000 users enhanced data protection via redundant arrays of inexpensive disks or RAID Level 1 mirroring, which means the device automatically replicates data on two drives simultaneously.

"What Camdex is offering gives users a high level of data security and a level of fault tolerance," said Crawford Del Prete, an analyst at International Data Corp. in Framingham, Mass. Yet total disk mirroring is very expensive "because you're buying twice the disk," he noted.

Camdex's \$7,950 disk subsystem consists of two 3½-in. small computer systems interface disk drives packaged in a single enclosure, with disk mirroring software and documentation that helps users implement mirroring features in IBM's Unix-based AIX.

The other three drives Camdex introduced — all offering greater capacity than IBM's equivalent drives at 43% to 57% less cost — include a 3½-in. entry-level disk with 426M bytes of formatted capacity and two high-end, 5¼-in. drives with formatted capacity of 1.35G to 1.42G bytes.

Camdex is IBM's only significant competitor in disk and memory products for the RS/6000 at this point, analysts noted. For users such as Celtic Life Insurance Co. in Chicago, that competition in price/performance is money in the bank.

"We were looking at expanding our [direct-access storage devices] and had quoted prices on everything from IBM," said Steve Desjardis, a programmer at Celtic Life, which uses two 1-G-byte external drives from Camdex. "Camdex beat them in every category," he added.



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# Hacker may have penetrated Pentagon

BY MICHAEL ALEXANDER  
OF STAFF

Military computer crime investigators were hunting last week to verify reports that an 18-year-old Israeli computer hacker penetrated computers at the Pentagon and pilfered classified information about the Patriot missile and other military secrets during the Persian Gulf war.

The teenager "was able to look at classified material during the Gulf war, especially at one very sensitive project, which is also connected to Israel," Gailice Region Police Commander Ramil Rav report-

edly told Reuters last week.

U.S. Department of Defense authorities have not been able to learn whether the teenager actually penetrated the military's computers, said Susan Hansen, a spokeswoman at the Pentagon.

"We can't find anyone who knows anything regarding this young man who has supposedly made such impressive strides in computer hacking," Hansen said.

A military investigator who requested anonymity said investigators in all branches of the military were collaborating on the investigation and were attempting to identify which systems the

teenager may have broken into. "It may have been a military system, but it was not classified because you cannot dial into classified systems," the investigator said.

The U.S. Department of State has also been asked by the Pentagon to look into the affair, the investigator said.

According to a report in *The Toronto Star* last week, the alleged hacker also obtained Visa credit-card numbers from banking computers and posted the numbers on electronic bulletin boards in the U.S. and Canada. Computer lockers in the U.S. and Canada used the illegally obtained numbers to charge tens of thou-

sands of dollars in sales, leading to the arrest of six hackers, the *Star* reported.

The Israeli detectives, acting on a tip from Canadian officials and with help from Israel's national telephone company, tracked down the teenager by monitoring heavy users of international phone lines, the *Star* reported.

In a search of the youth's home in the Israeli city of Carmiel two weeks ago, police found equipment that allowed him to make long-distance calls without paying. He has been under house arrest since then.

Rav told Reuters that police are not likely to press charges against the teenager because he merely penetrated the computers out of curiosity and had not profited from the Visa card fraud.

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## FAA probes jet simulators

BY J. A. SANCHEZ  
OF STAFF

Computer simulations used in airline safety certification came under the Federal Aviation Administration (FAA) microscope last week. The FAA began looking into the role that simulation flaws may have played in May's fatal crash of a Latin Air 767 in Thailand.

Computer simulations the FAA relied on did not have the proper input or parameters to measure safety of thrust reversers — an auxiliary braking mechanism — in conditions such as those surrounding the crash, according to federal agencies and the airplane's manufacturer.

A final report on the crash has not been released. Currently, Boeing Commercial Airplane Co. in Seattle, maker of the 767, and the FAA are at odds over the effect of computer simulation in the crash.

"We required Boeing to extrapolate, through computer simulation, the use of thrust reversers in several conditions above engine idling," said Stewart Miller, assistant manager at the FAA's Seattle Aircraft Certification Office. However, a Boeing spokesman contradicted the FAA. He said that simulation of the thrustreversers in speeds over life was not required by the FAA.

The FAA allows simulation in lieu of real-life testing in some situations. "But each case requires specific models for specific airplanes, and we look carefully at them," Miller said.

An FAA spokesman in Seattle confirmed that the agency is looking into simulations in general for safety certification. Dave Duff, an FAA spokesman, said, "It's not the simulator, but the lack of adequate data to program the simulator."

Alan Pollock, National Safety Transportation Board spokesman, said that he did not blame computer simulation in design and certification for the problems. "Computers are not failing us, but they have to be told what to do or you don't get the kind of result you want to see."

"You're only as good as your assumptions," a spokesman for the Airline Pilots Association in Washington, D.C., said. "If they did a simulation and found the airplane wouldn't crash, then obviously the simulation was not sophisticated enough, or they made assumptions and limitations that were not realistic."

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## ADVANCED TECHNOLOGY

## Multimedia city where shoppers stay at home

In Serendipity Ville, users browse with text, audio, graphics and full-motion video over phone lines

BY MICHAEL ALEXANDER  
OF STAFF

**W**hen multimedia videotex arrives, perhaps in only two or three years, users may find they have been immersed in a three-dimensional adventure game.

The research arm of the top phone carriers are already experimenting with the gateway to multimedia videotex, even before broadband switching and widespread use of fiber-optic cables become commonplace. Assuming the technical limitations can be overcome, multimedia videotex services will combine audio, text, graphics, full-motion video and other images and initially deliver them over ordinary telephone lines and eventually over fiber-optic cables.

Researchers at Bell-Northern Research, the research and development subsidiary of Northern Telecom, Inc. in Research Triangle Park, N.C., are testing with graphical interfaces that would allow users to navigate in an intuitive way through the thousands or even tens of thousands of services that might be offered.

"What we tried to discover was what kind of interface would make sense for the user in that kind of world," said Don Sawyer, manager of subscriber service exploratory at Bell-Northern. "One of the problems is that if you go with an interface that is based on menus and the sort of thing that you would see today with some videotex services, it gets quite difficult to use."

One of the most promising interfaces is based on a metaphorical city called Serendipity Ville, according to Bell-Northern's focus group testing. In Serendipity Ville, service providers appear as buildings or retail outlets, complete with outdoor signs. Users stroll the streets of the model city like window shoppers or zip straight to a district, street or service by using a keyboard or selecting a destination from a menu. If the traveler becomes lost, an "information agency" points the way like a friendly police officer on the beat.

**Stop and browse**

If the traveler pauses at a storefront, the store window becomes a full-motion video display, with audio that touts the available offerings. If interested, the traveler crosses an electronic threshold and enters a foyer where a building directory, list of services and other information are available.

"It's a form of virtual reality," Sawyer said. "You could go into a store, go down aisles, look at products on the shelves, put things in your basket and pay with your credit card when you leave the store."

The computer power needed to process multimedia videotex at home or in business could come from a personal computer; a compact disc-interactive player; a small multimedia box slated to be introduced later this year; or a 16-bit vi-

deogame player equipped with a compact disc/read-only memory player. The traveler navigates with a joystick or mouse or by pushing arrows on a rocker panel.

"One of the ideas we did test was putting the telephone and rocker controls in a cordless telephone," Sawyer said.



"If you go into a service that offers a voice connection, you could talk to people by phone."

The implementation of multimedia videotex services would begin gradually on wideband networks with a mix of audio, computer-generated images, still images and perhaps moving images inside a small window on a comput-

er or television screen.

"We know from experience with other videotex services [that] the idea of a forum has really caught on with people," Sawyer said. "Today, they do it by typing at each other. The idea of being able to sit at home and take your personal computer, go into a building on this street, then see somebody sitting there talking to you and being able to ask them questions is kind of exciting."

Although Bell-Northern is not developing Serendipity Ville as a product, the concept could be turned into reality in two or three years, Sawyer said. The biggest hitch is overcoming the problems of sequencing multimedia sounds and sights down existing copper telephone lines, he said.

A key piece of the puzzle is a transmission technology called Asynchronous Digital Subscriber Loop (ADSL), developed by Bell Communications Research, Inc., that proposes to deliver a bitstream of 1.5M bit/sec. to homes with two-way, Basic-Rate Integrated Services Digital Network. "ADSL still has to be proven reliable in the field," Sawyer said. If the technology is not viable, the introduction of multimedia videotex would hinge on the widespread installation of fiber-optic cables several years hence.

## Eye-tracking system may let eyes replace the mouse

BY MICHAEL ALEXANDER  
OF STAFF

**I**t may be the ultimate computer interface: an eye-tracking system that allows users to manipulate their computers merely by looking at them.

Iscan, Inc., a tiny 10-year-old company in Cambridge, Mass., markets eye-tracking systems that can be used in a wide variety of ways—from visually pushing buttons on a computer screen to market research testing to determine which advertisements catch consumers' eyes.

Iscan's biggest customers thus far are the military, university researchers and government agencies. A market for the systems, which is nonexistent now, could develop if computer companies can be sold on using the technology, said Iscan founders Pres-

ident Rikki Randan and Chairman Alan Kielar.

The military is investigating Iscan's technology for the cockpits of the future in which a helicopter pilot, for example, could select a target and lock a weapon onto it by looking at it. Perception Research Services, a market research firm in Englewood Cliffs, N.J., uses Iscan's equipment. The system allows the firm to precisely determine what catches a consumer's eye in a television advertisement or package design.

**It's all in a helmet**

At MIT's Media Lab in Cambridge, Mass., researchers are using a helmet-mounted eye-tracking system in computer interface research. One project combines eye tracking and voice recognition, allowing the helmet wearer to look at an object on-screen

and have it disappear when "delete" is spoken.

Researchers at Tufts University School of Medicine in Boston and MIT's Newman Lab are collaborating on a system for disabled people. A test subject triggers a speech synthesizer to vocalize letters of the alphabet displayed on a computer screen.

Randan and Kielar have developed a "dark pupil tracking system" that locks onto the center of the pupil and a spot of reflected light on the cornea. The setup consists of a video camera and a light source, a pupil/corneal reflection tracking system that detects eye movement and an autocorrelation system that computes the subject's point of gaze. The point of gaze appears as a cursor on a display to graphically indicate what the subject is looking at.

"It is a robust image processing system" unaffected by blinking, a slight jiggling of the head or a user wearing glasses or contact lenses, Randan said.

The primary constraints are that the subject must steady his head by means of a chin rest so that the illumi-

nator and video camera can lock onto the pupil and reflection on the cornea. Small movements of the head will not affect the system, but the range of movement is only a few inches left to right and up and down.

A more refined prototype system is being developed that is intended to be placed under a computer's monitor and would automatically lock into a user's eye. That system has a camera and illuminator mounted on a motorized platform and thus allows a greater range of head movement.

Randan and Kielar's most ambitious project is the Headmaster, an eye- and head-tracking system mounted on a flight helmet that allows the wearer to move about freely. Attached to the helmet are two tiny video cameras, an illuminator, a one-way mirror about the size of a silver dollar and a sensor that tracks the subject's head movement. The entire setup weighs 2 pounds, 10 ounces.

The primary application for the Headmaster is training and simulation for the military, Rikar said.

An entire head- and eye-tracking lab sells for \$50,000 to \$60,000.

# Five terms and conditions that could save you millions on your next lease

*Recent events in the leasing industry have shown that companies can no longer select a lessor based solely on lease rate. The terms and conditions of your agreement are now key considerations in determining your true long-term costs and hardware flexibility.*

Without flexible terms and conditions, your computer hardware options can be severely restricted when it comes time to upgrade or replace your equipment during the lease term. The question is: What can you do to protect yourself?

First, look closely at the leasing company you choose. Second, look even closer at your lease terms and conditions. And third, know your rights.

Following are some of the suggested rights you should consider when negotiating your next lease agreement.

**1** The right to add new, used, or third-party upgrades with or without financing from the original lessor.

If your lease makes it difficult to seek competitive upgrades, your only alternative may be to upgrade through the original lessor — at prices they dictate.

But if your lease gives you the flexibility to install new, used, or third-party upgrades from the vendor of your choice, you can decide which equipment to acquire, from whom — and at a price that's right for your budget.

**2** The right to reconfigure subleased equipment.

Most leasing companies say they will allow you to sublease. But, with a little digging, you may discover they will only

allow you to sublease if the system isn't reconfigured. This is an inconvenient, impractical, and unnecessary request, especially if you're only seeking a memory upgrade.

The right to reconfigure subleased equipment is not only reasonable, but necessary if subleasing is to be a practical, economical alternative for you.

*The fact is that upgrade expenses, not the rate of your lease, are likely to have the biggest impact on your overall costs. And if your lease has restrictive upgrade terms and conditions, it could end up costing you far more than any initial lease-rate savings. In some cases, millions of dollars more.*

**3** The right to sublease to other leasing companies.

Your lease agreement may state that your lessor will not "unreasonably withhold" its consent to allow you to sublease. But some lessors consider it reasonable to restrict your subleasing rights to end users only. They don't want independent leasing companies handling their equipment because, ultimately, convenient subleasing helps keep prices down.

Unless you have the time, resources, and skills required to remarket your equipment directly to end users, you should negotiate the right to sublease to other leasing companies.

**4** The right to return systems with like parts at the end of the lease. The leasing industry has long recognized that parts are fungible —

interchangeable — with other parts from the same manufacturer bearing the same part number.

You are the direct beneficiary of parts fungibility: leasing companies discount their upgrades because of the remarketing revenues they receive from parts removed during reconfiguration.

Without this right in your lease agreement, you may be forced to return your system at lease-end with the exact serial-numbered parts with which it was originally

configured. Your upgrade costs could be much greater.

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## EDITORIAL

## Open question

**W**e heard a lot of talk from IBM last week about openness, which is not a word we're accustomed to hearing from that company. Is IBM really open in the terms that the market has come to accept, or is openness in the eyes of the beholder?

IBM apparently believes the latter. In discussing its new Open Enterprise concept last week, the company defined open systems products as adhering "to protocols and industry standards that are available to other manufacturers." Notice there's no mention there of the word that everyone equates with open systems: Unix.

Quite the opposite. While IBM did make a major Unix endorsement, the plan it put forth last week was aimed at making its proprietary systems more "open" by supporting standards like TCP/IP and Posix. IBM also said Open Enterprise would involve connecting its highly proprietary Systems Application Architecture to accepted open systems products and protocols. Open systems are okay as long as they connect to an all-Blue host.

Open systems enthusiasts will scoff at IBM's openness statement as nothing more than self-serving puffery. But maybe it's the open systems concept that's flawed.

Webster's defines open as "having no enclosing or confining barrier; accessible on all or nearly all sides." By this definition, a Unix that runs on one manufacturer's workstations but not on another's is hardly open. In fact, what's the difference between that and an MVS that supports all the popular languages and protocols?

In a report released during IBM's product barrage last week, Technology Investment Strategies Corp. gave IBM an "A" grade for its efforts to integrate mainframes into an increasingly desktop-driven world, though it awarded only a "C" for delivery of products. IBM calls that kind of integration openness, and if that's what customers want, then what's wrong with it?

Another adherent to this approach is Hewlett-Packard. No one can argue that HP isn't serious about promoting open systems, but the company is also keen on selling its proprietary HP 3000/MPE line with a sales pitch it calls "open proprietary." HP argues that a proprietary operating system that supports all the popular interface, communications and programming language standards along with Posix is no less open than a Unix that runs only on an HP workstation. The same amount of rewriting is needed to move an application to a new platform, regardless of the underlying operating system.

The definition of open systems needs reworking. IS organizations that want to put the appropriate workstation on everyone's desk and let them all get at the corporate data they need don't give a hoot about the systems software on the mainframe. For them, IBM's definition of openness could be just what they want.

For users who want scalability, consistent commands and guaranteed TCP/IP support, then Unix is a better choice. Just be sure you know which proprietary version of Unix to select.



## LETTERS TO THE EDITOR

## Unending costs

In "What supplier wouldn't love tiered pricing?" (CW, July 11, Chuck Morgan pointed out that cable television companies would charge more to users of larger TV sets if they had followed the pricing policies set by software companies.

I would venture to take this observation further. The cable salesperson would call and offer a series of new services that I would agree to subscribe to for a charge. When I have agreed to it, he tells me I would need a larger TV in order to make use of the new services I have just bought. So I agree to buy a larger TV. Then he calls and says, "Since you have a larger TV, these services would cost you more."

This is precisely what is happening in the software industry because very often the inefficient software they provide makes it necessary to buy a larger system.

In any other industry, such a lucrative licensing scenario would have engendered a flurry of competition. But not so in the computer software industry because even if the competitors were to write more efficient software for a lower fee, the existing companies would use "lock and leaf" litigation against them.

K. C. Tok

Unidata Sendirian Berhad  
Malaysia

## E-mail success

Regarding "Still searching for the IS Holy Grail" (CW, Aug. 26), your story on Continental Bank Corp.'s Thomas C. Theobald, there are a number of important issues that need to be ad-

dressed by IS managers:

- Who is responsible for coming up with "fantastic new business concepts" that are relevant to our business?
- How are priorities set for investment in systems development projects?
- Is it the technologists who are internally focused, or is it the business managers?
- If electronic mail isn't effective in linking the business with the customer, is it the technology or the people that should be blamed?

At Unum, we think we've got a winning combination because the product and systems managers work as a team to define the concepts, set the priorities and balance the focus between internal efficiency and external effectiveness. The customer always comes first.

E-mail has grown steadily through its seven years at Unum — to the point that all employees are on the network, messages average over five per individual per day, and business units are "bundling" E-mail into products to increase the intensity of linkage with our customers.

John J. Alexander Jr.  
Senior vice president and  
chief information officer  
Unum Life Insurance Co.  
Portland, Maine

## Criteria needed

In response to "N.J. licensing proposal draws user opposition" (CW, Aug. 19), the proposed software designers licensing act, sponsored by New Jersey Assemblywoman Barbara F. Kalish, is urgently needed to establish a minimum criteria for competence.

Fraud is the issue! It's the un-

expected tax faced by the user when one learns that the expensive software designer "can't design." The losses suffered by users extend beyond direct costs and include the indirect costs of delayed plans, faulty operation and lost marketing opportunities.

Even worse is the "credibility cost" — damage to reputation when customer requirements can't be met and the resulting loss of confidence in decision-making capabilities.

Today, virtually anyone can claim that he is a "software designer." How do you judge proficiency without a minimal standard of competence? Accountants, lawyers, architects and medical practitioners all have to pass an examination aimed at establishing a minimal level of competence. Isn't it just as important to "professionalize" the multibillion-dollar software industry in order to weed out charlatans?

The act could also provide a "coherent process" for augmenting skill requirements in place of the current ad hoc approach to quantifying expertise. Weeding out imposters would reduce the cost of doing business by providing "certainty" as to an extended level of proficiency.

Bruce K. Brickman  
Consulting Services, Inc.  
Farmingdale, N.J.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Letherer, Editor in Chief, Computerworld, P.O. Box 9177, 375 Cookhouse Road, Framingham, Mass. 01701. Fax number: (508) 875-8331; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

# IBM is on a tough course where agility counts

HAROLD LORIN



IBM watchers with differing concerns are now wondering if IBM is in a life cycle crisis and whether it can find the leadership and technical vision necessary to overcome the forces that act on mature companies in new conditions.

IBM is pursuing three strategies relevant to these questions: downsizing and cost control; alliances and consortia; and Market Driven Quality (MDQ). These business strategies seem well-conceived. IBM should be credited for its responsible methods of staff reduction, recognition of the need for outside technology and interoperability and concern for customer needs.

These strategies could be counterproductive, however, if they are not executed within a culture appropriate for a high-technology competitor and interpreted with vision by people committed to the risk-taking inherent in technology leadership.

Misconceived cost control leads to disinvestment in projects that do not create immediate revenue or answer an immediate need. Advanced technology becomes the work of the research division, which de-

phenizes leadership research.

Obtaining new technology from the outside can be expensive and does not develop the internal competence necessary for leadership.

The potential benefit of promulgating the IBM RISC chip makes the "Apple Accords" a great coup. Yet these arrangements also raise questions about what software and development methodology will become core competence within IBM. IBM's experience with RISC and Microsoft did not enhance its ability to lead in telephony and small-systems software.

There are also potential negatives to MDQ. A proper analogy for a



technology company is a bomber wing of skilled professionals supported by administrative and maintenance staff. But MDQ (combined with company age, size and current culture) may empower a bureaucratic community, armed with simplistic measurements of quality to create an atmosphere more like that of the Pentagon.

Another risky aspect of MDQ is that customers are asked to visualize product direction. No growth firm in a rapidly changing industry can ask the market to certify, and render riskless, investment in the future.

IBM naturally uses itself as a systems integrator and enabler. In this role, it must have a special capacity for clarity in the face of chaos. This requires coherent and enduring software structures that form a true vehicle for the integrator's role and a steady direction that anticipates, not just reacts to, new developments.

Adopting strategies that require constant clarification will threaten the concept of systems integrator.

IBM must take a number of steps to establish and maintain a dominant role:

- Show a deep technical understanding of its position in open systems.
- Define how IBM's Systems Application Architecture (SAA)

relates to "open" and what SAA status does or does not mean for future product support.

- Conceptually lead and quickly deliver a new generation of systems management software.

- Show a leadership direction in end-user interfaces integrating IBM's Common User Access, Mainframe, Patriot Partners, Apple and so on.

- Move AD/Cycle more rapidly toward a truly integrated, interoperable environment.

- Assume leadership of heterogeneous distributed computing with well-defined roles for 390 architectures and a credible, open midsize 390 server. This must associate with a credible strategy for re-engineering and modernizing older software platforms.

- Define a vision of the future relations of PCs and workstations.

These are talismans of IBM's ability to recognize and react to change to achieve long-term corporate goals in a way necessary to lead an industry. Without significant success in these areas and the organization reform necessary to achieve them, IBM's future could be defined by new entrants in a very different industry.

Lorin is a consultant to IBM development laboratories and IBM Institute, an IBM Business Systems Research Institute and adjunct senior professor at Rutgers University.

# The pluses of patents

READER'S PLATFORM

PETER MCCAULEY

I have read some negative articles and comments in *Computerworld* about software patents. There are, I think, good reasons for patents to be sought and granted for software.

Computer programs are directly translatable into electronic circuits. Indeed, some early procedures were converted into "hardware" and patented in that way.

Whether in the form of the squiggly lines of a circuit diagram or the near-English of today's complex languages, the essential technology of a computer procedure is the same. The difference is strictly a matter of convenience, and most of us find it much easier to understand the common language form. The question, then, is not about hardware or software, but the desirability of patents for computer procedures in any form.

To be valid, a patent must be both "novel" and "not obvious" to a person skilled in the technology. After reviewing an application (from an adversarial perspective), the Patent Office will sometimes err in granting a patent. But even so, most mistakes that do occur, patents are not irreparable. There is an established

Continued on page 26

# You can't process customers like data

RICHARD C. WHITELEY



In the last few years, a growing number of companies have recognized that improving quality by meeting or exceeding customer expectations will keep them ahead of the competition and help assure superior profitability. Many of these organizations have turned to technology for help.

Information technology can be a powerful tool for providing better service to customers, but some companies that have invested in new systems are not enjoying the results they expected. The chief reason, I believe, is that they focus more on the technology itself than the benefits it will bring to the customer. As a result, they end up with state-of-the-art systems that do little to increase customer satisfaction. In some cases, they may actually erode customer relationships.

One very costly mistake in this regard has to do with understanding customer needs. Most companies don't know what

their customers want. A major insurance company assumed its customers would appreciate faster processing and payment of claims, so it invested in an expensive computer system to speed claim transactions. Later, the company found out that its customers were less concerned about fast payment than simply being assured of a date when they could expect payment.

Technology can help a company's quality-improvement efforts only if it is solidly grounded on customer needs. Businesses serious about quality listen to the collective voice of their customers and make sure that voice is heard throughout the organization. Only then will they attempt to develop and apply technology to the process of exceeding customer expectations.

But even understanding customer needs doesn't guarantee success. A case in point is the apparel industry, where the average retail store is out of stock on 30% of its items at any one time. This creates disappointment and frustration for consumers, headaches for retail buyers and chaos among suppliers as they scramble

to produce and ship more products. Efforts to solve this problem have involved harnessing technology to speed orders. Requests from sales clerks to retail buyers to distributors and, finally, to manufacturers were processed faster, but the out-of-stock situation continued.

## Giving customers control

A more customer-focused solution was adopted several years ago by VF Corp., maker of Wrangler, Jantzen and other famous apparel. Lawrence R. Pugh, the company's chief executive, said the firm realized the answer wasn't simply to apply technology to an old process. The entire response system had to be fundamentally changed.

VF devised and implemented an innovative system that feeds back consumer purchase data simultaneously to VF's sales, marketing, production and distribution departments. As stock on any item in any store is depleting, everybody in the distribution chain is alerted at the same time and can take the appropriate action to ensure that customers will find the products they

want, in the right sizes and colors every day. Pugh says VF ultimately can achieve a 40% reduction in order cycle time, a 30% reduction in total inventory and a 20% reduction in cost.

A third obstacle that stymies many quests for quality, particularly in businesses that have direct contact with customers, is relying too heavily on technology and forgetting that the human touch is still what counts most. In my experience, this imbalance is most often the result of poor training. This was confirmed recently by a registration clerk I encountered while checking in at a prestigious Chicago hotel. I asked the clerk why staff members were setting up microphones and speakers nearby.

"I don't know," he said, as he continued punching keys on his terminal.

"Who would know?" I pressed.

"I'm not sure," came the reply. "Maybe the assistant manager."

When he was finished on the computer, he handed me the room key and said in a sincere voice, "Thank you very much, Mr. Whiteley. My name is John. If there's anything I can do to help you during your stay, please

let me know."

Incredibly, I looked at him and said as politely as I could, "John, I just asked you for help and didn't get it."

John's training had obviously focused on how to process customers and not on how to please them. So he processed me much as a machine processes data, sausage or cheese. He did not make a distinction between following his script and using initiative to create a happy customer. As a result, although the check-in was speedy and technically perfect, the customer was not well-served.

In quality organizations, the customer drives every decision. Information technology can be a valuable ally in creating a customer-focused company, but systems and their applications must be linked directly to customer needs and expectations. Otherwise, the investment is wasted, and rather than creating satisfied customers, it may very well drive them away.

Whiteley is vice chairman of The Pomeroy Corp., a Boston consulting and training firm. He is the author of *The Customer-Driven Company*, moving from Talk to Action, published by Addison-Wesley Publishing Co.

# McCauley

CONTINUED FROM PAGE 23

lished procedure for challenging patents after they are granted, and the recent history is that about 30% of the challenges succeed. If a patent really ought not to have been granted, then there is an excellent chance it won't stand up to a challenge.

Although a patent gives an individual inventor a good bargaining position with big companies, the patent is still subject to challenge, so the inventors generally are very reasonable about keeping the royalties to a modest level—typically, only a small fraction of the benefit realized by the user. Where are the actual instances

of excessive payments to payees, and how much do they amount to overall?

Two software patents have been discussed in the press recently: Heckel's patent for overlapping window displays and Karmarkar's patent for a faster solution to linear programming problems.

Without having read either patent, the "overlapping windows" patent seems to be in the vein of a "look and feel" question, which I and many others find problematic because of the limited physical options available. The "look and feel" topic is under intense scrutiny and will, one hopes, be settled in the near future. But computers have been around for 40 years, so if Heckel was the first to come up with overlapping displays, then maybe he is entitled to an investor's royalties

from those who elect to use such displays in their programs.

Karmarkar's patent is an easier and more typical case. He attacked a well-known problem, which could sometimes take hours to run and, according to the reports, came up with a more efficient method. It is a problem that has been extensively researched since the 1950s. It must have cost Bell Labs a fair amount for Karmarkar to invent and develop this method, so why shouldn't Bell be granted a patent for it? How else could the firm realize a return on its investment?

The traditional commercial treatment of new but unpatentable technology is to keep it a "trade secret." In the instance of Karmarkar's methodology, Bell Labs could set it up for AT&T to use on

networking problems, increasing the speed of solutions and reducing computing costs accordingly, and the rest of the world would just grind along as before, expending other resources on the same problem.

## Waste of talent

A recent article in *National Geographic* on Silicon Valley included a picture of some electrical engineers crawling over a floor projection of another manufacturer's microchip, trying to decipher the technology. Is it desirable that their years of study and effort should be put to that purpose? This inherently wasteful, counterproductive approach is exactly what patents help to avoid.

Copyrights last much longer than patents and are not subject to prior administrative review. They also make possible some truly goofy protection devices, such as "publishing" in some never-to-be-read monograph every possible near-equivalent variation of the central part of a computer procedure and then copyrighting

**I**NVENTORS generally are very reasonable about keeping the royalties to a modest level—typically, only a small fraction of the benefit realized by the user.

the whole thing. If we, as a discipline, reject patents in favor of copyrights to protect intellectual property rights for software, then we'll deserve the long-running legal mess we can expect to result.

So long as there are corrupt experts ready to make false statements, dishonest persons willing to pay them and unscrupulous lawyers able to assist the miscreants in their activities, we can expect lawsuits and their associated grief. However, no one has ever shown that patents lead to more litigation than relying on copyrights and trade secrets would. On the contrary, because patenting expressly addresses the issues of "new technology" in a direct and straightforward manner, it is more reasonable to expect that it leads to less litigation and economic harm than would otherwise occur.

There will always be ordinary mistakes, but the relatively clear patent format should help these to be corrected as soon as possible, which honorable persons will naturally do. Given that we are going to have litigation, doesn't it make sense to put it in the most appropriate form?

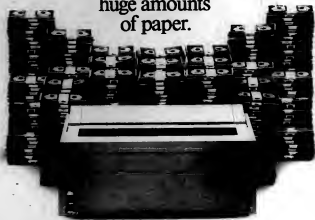
Finally, the acid test: How has patenting been working out in actual practice with respect to furtherance of invention?

In electronics, circuits have been patented since the early part of the century, computer algorithms since the 1960s. Does anyone seriously want to contend that there has been a lack of innovation in those areas?

I, myself, have no patent applications pending or even being contemplated. If I come up with a commercially valuable idea, however, I would like to have the option of patenting it if I choose. In the meantime, I certainly want others to have that option open to them, too. Practically speaking, for individual inventors, there is no similarly effective alternative.

McCauley is an independent consultant and erstwhile investor based in New York.

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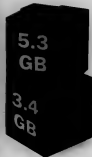
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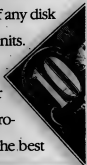
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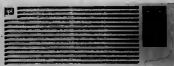
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# SYSTEMS & SOFTWARE

## NEW DEALS Ask signs four deals

**Ask Computer Systems, Inc.**, said it recently signed four deals for its **Minimom** manufacturing software that should bring the company about \$7 million. The customers are **Exxon Pipeline Corp.**, **Fluor Corp.**, **Fluor Engineering, Inc.** and **Specialty Castings Group**.

The **Scientific Engineering Research Council** in the UK recently purchased a minisupercomputer from **Alliant Computer Systems Corp.** The **FX/2800**, which is based on a reduced instruction set computing architecture, will be used for analysis of fluid dynamics problems.

An **Intel Corp.** **IPSC/860** parallel supercomputer was recently purchased by a group of university and government agencies and will be installed at the **State University of New York's Stony Brook campus**. Research will be supported by the **National Science Foundation**, the **U.S. Department of Energy** and the **U.S. Army Research Office**. All three helped pay for the 33-node computer.

## Unix superuser dethroned

Security concerns relegate feature to System V optional status

BY JEAN S. DOZMAN  
CW/STAFF

The Unix "superuser," which has existed since the birth of Unix at Bell Laboratories in 1971, will be phased out of Unix System V over the next two years, according to executives at Unix System Laboratories (USL) in Summit, N.J.

This special superuser status—a log-on that is routinely used to quickly access Unix files or to reassign user IDs—will become an option in future System V.4 releases, rather than a standard feature. That will eliminate a widespread Unix programming

shortcut because anyone who knows the superuser password enjoys all system privileges.

"It's a time to take the sands off and to allow the boards," said Ricki Kirnner, a senior industry analyst who covers Unix for Dataquest, Inc. in San Jose, Calif., referring to the early advocates of Unix as a casual crowd. "The warts-and-daisy features of Unix, which made it popular among university researchers, are going away because the commercial world demands that Unix grow up and take responsibility for security."

The first "secure" version of Unix System V, Release 4.1,

called ES for Enhanced Security, will begin to be ported to hardware systems in 1992, said Rod Pieper, executive vice president of marketing at USL. But by 1993, the same security features will be rolled into the standard version of Unix System V, Release 4.2— affecting all end users — Pieper said. USL, an AT&T spin-off created in 1991, writes all the source code for Unix System V.

Users like to use superuser status to access hard-to-reach files quickly, Kirnner said. But that one password is simply too powerful, critics complained — adding that many superusers can

be on-line simultaneously. Even application programs can masquerade as the superuser, said Craig Rubin, a member of the USL technical staff who helped design the new, secure version. "Some people wrote programs that said 'Set UID to ROOT' — and then the program became the superuser, just to get some job done," Rubin said.

Some users at large commercial sites said they must create their own security through physical isolation of Unix computers, or through multiple passwords. "Dohy, I have separate pieces of security scattered throughout my network," said Gordon Kerr, senior vice president of MIS at Hyatt Hotels and Resorts, Inc. in Chicago. "I'm looking for a more consistent and cohesive arrangement." A year ago, Hyatt re-

Continued on page 35

## Saks adds Siemens POS to expedite shopping

ON SITE

BY KIM S. NASH  
CW/STAFF

Saks Fifth Avenue has found a faster, more efficient way to take your money. When next you buy a pair of those comfy all-cotton socks or a new navy blazer at one of the store's 47 — soon to be 48 — branches, the sales clerks will zip you through checkout with a new point-of-sale (POS) system from Siemens/Nadador Information Systems, Inc.

The New York-based retailer

plans to install Siemens POS platforms in half of its stores in time for the Christmas hustle.

"We're pushing for one store a week through the fall," said Stewart Neill, vice president of Saks' 100-person information systems staff.

The projected \$10 million cost of the new system is a big chunk of change, especially for a company in the recession-weary retail business. But Saks has held its own during the recession. It ranks ninth among U.S. department store chains, with 1990 sales of \$1.24 billion — a 3% jump over last year according to



Saks Fifth Avenue uses its POS system doing the "little things" to help clerks in their jobs.

*Stores magazine*, published by the National Retail Federation, a trade group based in New York.

The decision to go with Siemens did not come easy. Neill

said he knew his company should replace its outdated 7-year-old IBM 3685 terminals and POS software from **Purt Software Inc.**

Continued on page 34

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So it goes with software development. Most large projects are backed up so long, by the time an application is new, it's old. Worse, it may not even be what was asked for in the first place.

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## still, how fast can the rest of your business go?

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The roots of today's backlogs are many, but the biggest culprits have been a lack of standards and direction—the very ills that AD/Cycle is designed to cure.

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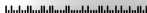
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# Ford gives users a database with a VIEW

Car Product Development's mainframe-based interface lets its users access multiple data sources

## ON SITE

BY JOHANNA AMBROSIO  
OF STAFF

What do you have with 150 end users who need to access multiple sources of data? If you're Ford Motor Co., you give them a system with a VIEW.

VIEW, or Virtual Interface Engineering Window, was developed at Ford's Car Product Development Division (CPD) in Detroit two years ago to meet just such a need. The firm is now working on a parallel interface for personal computer users.

With the menu-driven VIEW interface, end users can access DB2, flat files and subnets of IMS, as well as create reports "without recoding a system that's already out there," said Wendy Balaska, systems analyst

at CPD's product and manufacturing systems unit.

The information systems department does not need to create a second set of information for users to access. With the exception of the IMS data, users go



to the databases they need, which saves system resources.

Because IMS is the production database, Balaska said, "the company set down a rule that VIEW doesn't access IMS. Those applications are very sensitive." In addition, IMS extracts

are created for users to access.

Another difficulty before VIEW, she said, was that "users had a real problem creating reports that met their unique needs. There weren't enough systems 'people' to answer the call. 'This gives end users the ability to do it themselves, to control their own destiny.'"

With VIEW, users created 12 reports in two months that would have taken two years under the old system. "Before, systems 'people' would go back and forth to the customers, asking what they wanted," Balaska said.

Most users in the product and manufacturing systems unit are hooked into engineering and other applications that monitor the car-development process. These include systems for diagnostics and timing when automobile parts need to be in the manufac-

turing plants.

Balaska wrote VIEW in four months using Information Builders, Inc.'s Focus fourth-generation language. "It would have taken me at least 9½ months doing it in Cobol," she said. "What encouraged us to develop it was that, with Focus, it was a very low-resource application."

Users can keep report formats in their personal libraries to run on the fly or overnight or to print out. These tasks were very difficult to do on their own," she added.

VIEW offers menus that walk users through the process of accessing information and creat-

ing, storing and printing reports. Expert users can use shortcuts to get around the menus.

One feature added about a month ago was a global library, accessible by anyone on the system. When a report format is created that the user thinks might be helpful for someone else, he can put a brief description of it into the global library. Other users can request it at will.

The mainframe-based VIEW is pretty stable, with more than a dozen applications and users from 20 other divisions as well as those from CPD. "And it will grow," Balaska said. "We've done some internal marketing to let people know it's there."

Ford's VIEW lets users create reports fast. With VIEW is to develop a PC equivalent so users can access data from a mainframe and download it into a spreadsheet or word processor.



Ford's VIEW lets users create reports fast

## AS/400 scheme breaks into uncharted ground

BY MARYFRAN JOHNSON  
OF STAFF

As the first midrange computer with shrink-wrapped software and satisfaction guaranteed, IBM's new Application System/400 Model D2 hopes to elbow its way into new office territories and cozy corners of personal computers.

Fueled that journey will be third-party software vendors that are providing the so-called "Plug 'N' Go" applications, which IBM will sell separately or as bundled systems with the D2 models.

Available Oct. 11 at prices ranging from \$18,000 to \$46,000, the prepackaged systems include an AS/400 Model D2, terminals, printers and a choice of 17 applications geared to a variety of industries. Users

who need to manage merchandise, for example, could install a D2 bundled with Basic Retailer software from Retail Interact, Inc. for \$26,924.

Another dozen applications are offered separately as Plug 'N' Go packages for the D2 models, with prices starting at \$499 for a basic spreadsheet. Small construction firms that could not afford integrated accounting and project management software — such as the \$50,000 to \$175,000 McCooker Contractor Series from The McCooker Corp. — can now buy a D2 version of that package for \$12,000.

The Plug 'N' Go software packages run the gamut from governmental accounting and courthouse records processing to merchandising, equipment maintenance and even dog license administration.

"Every once in a while, IBM gives some thought to the user perspective, and I believe they've done that with this one," said Kevin Owen, manager of information services at Blount Construction, a division of Blount Inc., Montgomery, Ala. The company currently has 10 job sites in the U.S. and is also working with the U.S. Army Corps of Engineers on the rebuilding of Kuwait.

With base hardware costs starting at \$12,000, the AS/400 D2s give companies like Blount "a tremendous amount of new opportunities and options" for satisfying client requirements at various job sites, Owen said.

An AS/400 B45 model at company headquarters runs the McCooker Contractor Series software, and the option of running that application virtually unchanged on remote D2s is an attractive one, he added.

"We use a lot of PC networks on the job sites now, and this new AS/400 would fit well in those scenarios with the PCs acting as workstations to the D2," Owen

explained.

Industry analysts said they were surprised that IBM did not strip out features or functions from the OS/400 operating system, such as its built-in relational database, for the entry-level D2 models. The additional lure of guaranteeing the third-party software as well as its own hardware was a savvy marketing ploy for IBM, analysts noted.

"New business is the main thrust of this machine," said Teresa Elms, president of Elms Technical Communications, a market research firm specializing in the IBM midrange. "This shrink-wrapped approach to the software is going after the first-time computer user."

For their products to qualify as certified Plug 'N' Go applications, software vendors have to meet IBM standards for clearly written documentation, ease-of-use features and the Common User Access interface, a Systems Application Architecture standard.

"The only way you can compete with really cheap technol-

ogy is to make the AS/400 incredibly easy to sell," said Peter Burris, an analyst at International Data Corp. in Framingham, Mass. "Plug 'N' Go goes a long way toward satisfying the [profit] margin needs in the reseller channel, as well as for a lot of large, centralized MIS organizations that are going to replace systems in offices or job sites."

At Lewis Harnes Management Corp. in Upland, Calif., for example, the D2 price tag and its upgradability make the AS/400 a viable choice for remote locations. Yet more importantly, the D2s open the way for disaster recovery and backup, said Hugh Scheffy, vice president/controller at Lewis.

"We can't justify using mirrored disks, but we can justify using smaller machines," said Scheffy, whose company is one of the largest privately held home builders in the nation.

"If you've got certain files available locally in the regional offices, that can be considered your backup," he said.

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# Sara Lee adds PC tools to DB2 mix

BY CHRISTOPHER LINDQUEST  
CW STAFF

Sara Lee Corp. had a problem. A major DB2 development project was under way, but the company's IBM 3090 Model 300S was being pushed to its limit, and developers could not be given the processing time they would need for building and testing the applications. At one time the solution would have been a costly mainframe upgrade. This time, however, the answer came in the form of personal computers.

Mike Burton, manager of information engineering services at Winston-Salem,

N.C.-based Sara Lee Direct, said the company started using XDB Systems, Inc.'s XDB-Workbench in April 1990 as his department approached the construction phase of the project. That is when he ran into a wall. "We knew we didn't have enough mainframe power to do all of the development and unit testing types of activities," he said.

Moving from mainframe- to PC-based development was not a step to be taken lightly. Many of the programmers were not PC-literate, and cultural differences had to be considered. Burton looked for tools that would be user-friendly enough

that developers could learn them quickly, but "at the same time we wanted to find things that would give them more power than they had on the mainframe," he said. The tools had to be as compatible as possible with the mainframe development environment—Cobol, CICS and DB2.

Burton said he looked at Database Manager from IBM but settled on XDB because it was more compatible with DB2 and had better features. "When it goes to DB2, it's ready to go," he said.

About 35 of the company's 75 developers are currently writing DB2 applications on PCs, with the rest scheduled to

move by this December. Other benefits of the move are that the processing load on the mainframe dropped, and developers were made more productive with faster compilation times and tools that were more user-friendly and often more powerful than their mainframe-based counterparts. "We feel that in some cases we've at least cut the construction [time] by 50%," he added.

While Burton said many shops could benefit from PC-based development, not every project will be an immediate candidate. "You have to throw a dose of common sense in there," he said. "If you've got a program that needs a fix, and you need to change one line and it's sitting up on the mainframe, you probably wouldn't pull it down to the PC to do that."

## Saks POS

CONTINUED FROM PAGE 29

ternational, Inc., but Saks had never used Siemens equipment.

Neill was armed with a POS wish list that included full alphanumeric keyboards and normal-size screens on terminals that can be hot-keyed to an IBM 3090 Model 400E mainframe in the company's New Jersey data center. He found only two vendors that fit the bill: IBM and Siemens.

A two-month trial of IBM and Siemens setups in two busy New Jersey branches ended with sales clerks voting unanimously for Siemens. "Both did the same functions, but Siemens was more refined and easier to navigate," Neill said.

Sales clerks said they had to go through too many gyrations on the IBM system to correct mistakes, according to Neill. Another well-liked Siemens feature was its swinging screen, which lets clerks turn the display so customers could verify names and addresses for shipping.

The Siemens gear also boosted morale. When a clerk reached his daily sales goal, "Congratulations" flashed across the screen. "Small things, but they are the reason Siemens won," Neill said, adding that the price difference between IBM and Siemens was "negligible."

Saks plans to install the new systems on Saturday nights, when most stores close early and do not open until late Sunday. "That gives us a few extra hours should something go wrong," Neill said, but nothing has so far. The POS systems are being integrated into Saks' Token Ring networks, where one T1 multiplexer shuttles data between the retailer's branches and its New Jersey data center. Another connects the data center to corporate headquarters and distribution centers in California and New York.

"Everything done on the mainframe will be available to our associates at their registers," Neill said. Along with inventory and price data, clerks will be able to browse on-line store policy manuals and context-sensitive Help screens, he added.

No new customer statistics will be collected. The major benefit is the increased speed with which sales clerks can take care of customers. If they can more quickly handle tasks such as inputting garment ticket data, they have more time to promote other Saks services, Neill said.

Once Saks has installed new POS equipment at all 48 stores in May 1992, it will have spent \$10 million on Siemens Targem minicomputers, custom software, 2,000 terminals and training more than 6,000 sales clerks, Neill said.

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## Users not satisfied with open systems efforts

Fortune 1,000 companies are not satisfied with vendors' and standards groups' abilities to deliver open systems as promised, according to a recently published survey.

There also seems to be a gap between what users are trying to accomplish with open systems and what vendors are focusing on, the report said.

In the report, released late last month by Forrester Research, Inc. in Cambridge, Mass., respondents from 64 large user companies scored vendors on a scale of one to five, with five representing the most open.

Two vendors — Sybase, Inc. and Mi-

crosoft Corp. — received the highest score of 3.4, as did the generic category of personal computer clone makers. Hewlett-Packard Co. scored the highest of any hardware manufacturer, with 3.2. IBM rated a penultimate 2.5, and Apple Computer, Inc. posted the lowest score, with a rating of 2.1.

### Preference for Poix

The report also asked users which standards bodies they follow for direction. The answer was this: 52% said none, and 24% cited the Institute of Electrical and Electronics Engineers, Inc., with its Poix standard. No other standard received a

significant mention.

The primary reason behind all the dissatisfaction, the report said, was that vendors are focusing on application portability, while users said they really want to link multivendor systems in a seamless kind of way.

What could result from this, the report said, is an impasse: Users will not adopt open systems quickly because of a perceived lack of responsiveness by the vendor community.

In turn, more vendors may be weakened financially; thus there will be fewer open systems products to choose from.

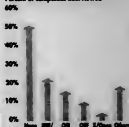
JOHANNA AMBROSIO

### No winner

Users were not looking to standards groups for guidance on open systems

Which standards groups do you look to for direction?

Percent of companies interviewed



Source: Forrester Research, Inc.

CW Chart: Janet Gonzalez

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## Superuser

CONTINUED FROM PAGE 29

placed an IBM 4381 mainframe with four Unix-based AT&T System 7000 processors to run a high-speed reservation system.

Many users control Unix security by sticking to policy guidelines. "We're not casual about security, and we don't distribute the superuser password," said Doug Sharp, a manager of research at Bell-Northern Research in Montreal, which manufactures telecommunications equipment. "Having more security would be a good feature, but I'm not sure we would go out of our way to pay for it." USL is selling Unix System V source-code licenses for \$100,000; the new ES features would cost buyers \$100,000 more, USL said.

Users who prefer to use the superuser in releases beyond System V, Release 4.2, will be able to do so but only by dis-

**M**ANY USERS CONTROL Unix security by sticking to policy guidelines.

abling the built-in security defaults. "Those people who don't want security don't have to implement it anyway," said Tom Littauer, product marketing manager of Amdahl Corp.'s UTS Unix system for mainframes, which is based on Unix System V, Release 4. "The most important change will be in the image of Unix as an insecure environment in which to work. It's quite safe," he said.

Among the first to announce ports of the Release 4.1 ES software are Siemens AG in Germany and International Computers Ltd. in the UK. Other U.S. vendors are also expected to follow suit, including Santa Clara, Calif.-based Amdahl, which helped USL engineers design the new secure software. Another partner in the secure-Unix project was Motorola, Inc. Both Amdahl and Motorola are minority shareholders in USL. The development was certified for B2 security clearance by the National Computer Security Center, an affiliate of the National Security Agency, based in Fort Meade, Md.

## Syncsort's sorting package now in sync with DEC VAX

BY JOHANNA AMBROSIO  
CW STAFF

Syncsort, Inc.'s sorting package has been ported to Digital Equipment Corp.'s VAX computer family. Early users reported that the software helps improve system utilization by at least 20%.

Syncsort on the VAX, available now for prices ranging from \$2,900 to \$14,000, helps computers group records in a specified way, such as in alphabetical

or ascending numeric order. The package's commands and functions are totally compatible with those in DEC's VAX/VMS Sort/Merge utility, with which it competes. Syncsort runs under VMS Release 5.0 or higher.

"It completely replaces" the sort program that comes with the VAX, said Jon Vandegrift, systems manager at Research Data Corp., in Haddonfield, N.J., a beta-test site for the package. "There are no incompatibilities, and you don't have to

recompile anything to use it."

He said that Syncsort speeds up the sorting process by about 40% over the VAX routines. His company is considering purchasing Syncsort because "we're heavy users of statistical packages, so we're looking for any performance improvements we can get."

### User reports

Tim Gilow, a systems analyst at Corning, Inc.'s Erwin manufacturing facility in Corning, N.Y., said he found some incompatibilities when trying to use Syncsort with several applications packages. He said these are being worked out and that Syncsort's performance is "very good. We've seen a 50% reduction in page faults since putting it into production" about three

weeks ago.

Donald Wazolek, Syncsort's VMS product manager, said that the package saves up to 50% of CPU time, 45% of I/O counts, 30% of elapsed time and 80% of page faults compared with the DEC program. All told, he said, the software can cut sort resource consumption in half. "Our thrust is to provide value to the VMS manager. Now they have a significantly better performance alternative," he said.

Wazolek said that the VAX package was based on the same design principles as the company's existing sorting software for IBM mainframes, Prime Computer, Inc. computers and Hewlett-Packard Co. machines.

Other features of Syncsort include an interface that allows users to correct errors without having to re-execute the job, and a multiple output facility that can direct files — with a single pass — to individual output devices.

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### SOFTWARE SHORTS

## Sites manage without DBMS

Database management systems may be all the rage in the largest mainframe shops, but there remains a sizable number of mainframe sites with nary a DBMS on the premises, according to research by Computer Intelligence/Info-corp. CI/Info-corp found that while 59% of IBM plus-compatible mainframe sites have one or more DBMSs, the other 41% are managing without. Among businesses lacking a mainframe-based DBMS, half do have a DBMS on a smaller hardware platform elsewhere in the firm, while the other half chew them entirely. However, few of the sites without a DBMS make the Fortune 1,000 list. CI/Info-corp noted, and a majority of those missing a DBMS are using an old IBM 4300 or 9370 mainframe as their major processor.

Digital Equipment Corp. and Cimcor Factory Controls, Inc. in Aurora, Ill., have announced a distribution and consulting agreement under which DEC will sell and support Cimcor's cell control and factory-floor management software as part of its systems integration services. DEC said it plans to leverage this expanded agreement to better position itself as a prime contractor for manufacturing systems integration work in the aerospace, automotive and electronics industries.

NCR Corp. and Long Beach, Calif.-based application development software firm Synthesis Computer Technologies, Inc. will jointly market CASE/AF, Synthesis' computer-aided software engineering (CASE) development tool for Unix. NCR will pair its System 3000 line of scalable, microprocessor-based computer systems with CASE/AF.

## PRODUCT REVIEW

## Pansophic short on CASE

Pansophic Systems, Inc.

This is the twelfth and final product briefing in a series of performance benchmarks that have focused on the integration of computer-aided software engineering (CASE) and fourth-generation language (4GL) products. The benchmarks are monitored by an independent team headed by David Whiteide, managing director of Computing Futures Ltd. and his associate, Prof. Eberhard Rudolph, formerly of the University of Auckland, for exclusive publication in *Computerworld*.

Each product is observed in action over a three-day period during which a vendor team solves the case study project using its system, an application that is familiar to most information systems professionals. The team's mission is to demonstrate the capability of the major CASE/4GL environments to deliver efficient and complete business solutions under "live fire" conditions. In this issue,

we look at Telen from Pansophic Systems, Inc. Pansophic has agreed to be acquired by Computer Associates International, Inc. CA has not stated its plans for modifying Pansophic's CASE products.

The benchmark was carried out at the Pansophic main office in Little, Ill., by a team of four persons.

At the end of the three-day benchmark the final solution fell short of the requirements in the interface, the complex report and part of the enhancements. Although some shortcomings were caused by hardware configuration problems, the level of completion was at best "fair."

In the early stages, exploratory prototypes were produced quickly. Thereafter, however, progress was very slow, requiring heavy Cobol coding to implement the detail asked for in the benchmark. With 97 hours, 40 minutes total effort, the team had to struggle to complete the benchmark in time. The development

speed was assessed as "fair."

The rigid format of the Telen environment assisted in the readability of the program code. This was demonstrated when correcting bugs and during the maintenance phase. The amount of detail required to make changes and the consideration that had to be given to the operational environment reduced the effectiveness. With an incomplete enhancement, we can only estimate the speed of maintenance as "good."

In the absence of any design or CASE tool, the documentation was restricted to Telen and Cobol

## The tool kit

- Telen - Development platform
- DB2 - IBM database management system
- Easytrieve - Data management and reporting tool
- Easytrieve/PC - PC version of Easytrieve
- EZ/IO - End-user query language

## Consultant's assessment

	Poor	Fair	Good	Very good	Excellent
Level of completion					
Speed of development					
Speed of maintenance					
Documentation					
Integration of tools					
End-user response					

source code. Because of the mechanical nature of the generated code, neither of these were easy to read. On-line documentation of Telen panels was provided. The documentation of the benchmark was rated as "fair."

Without a higher level CASE tool, the level of integration could not be assessed. The end-user tools and the Telen environment, however, were fully integrated, working from the same DB2 definitions and being accessible from the same menus. The degree of integration was "fair."

With EZ/IO for straight inquiries, Pansophic fielded an excellent product. For the more sophisticated parameter-driven end-user queries, Easytrieve had to be used. The combined tools

were judged "very good" as end-user languages.

Incremental prototyping development gave confidence and enabled end-user participation at the early stages of the development. When the details had to be done, the going got tough. Much Cobol, JCL and DB2 work was left to the programmer with no or little assistance given by the development environment. The systems analysis and design stages were neglected, and as a consequence, several fundamental errors went unnoticed, preventing completion of the benchmark solution.

In summary, the Pansophic development environment produced only a partial solution, which then had to be integrated manually into the hardware and operational environment.

## Development and maintenance report card

## ANALYSIS AND DESIGN: NA

At the time of the benchmark, Pansophic had not yet announced its Open Architecture for front-end upper-CASE tools. Without a released version, the analysis and design of the benchmark was done by hand on the whiteboard.

**Strength:** It has an open-end CASE strategy.

**Weakness:** It is not yet fully implemented.

## DATABASE SETUP: C

The database setup was done manually with standard DB2 data definition. The fact that this stage was completed in a short period of time was because of the experience of the team members. The tool set did not give much support.

**Strength:** None are evident.

**Weakness:** It is a manual process.

## FILE MAINTENANCE

**TRANSACTIONS: D**  
With 30 hours required to develop these functions, the Telen team required the longest time in the benchmark series. The de-

velopers had to address much detail with only the Cobol code-generating process automated.

**Strength:** It has a standardized program structure.

**Weakness:** Much detail is left to the programmer.

## COMPLEX TRANSACTIONS: C

Taking more than twice the average time, this stage again was

slow to be solved. When completed, however, only a few modifications were needed to comply with all constraints.

**Strength:** It can generate some complex functionality.

**Weakness:** It still relies heavily on the developer's skills.

## INQUIRIES: B

The inquiry was completed in 10 minutes. Yet the functionality of

EZ/IO was limited to nonparameterized inquiries. Easytrieve solutions required more time and programming skills.

**Strength:** It is integrated with Telen solutions.

**Weakness:** It is limited to basic queries.

## COMPLEX REPORT: F

This task could not be completed and tested because a wrong terminal type was configured and the error was not detected until very late into the benchmark. With the Telen test facility inoperable, we failed to witness a working solution.

**Strength:** Unable to assess it.

**Weakness:** Unable to assess it.

## INTERFACE: F

The Ashton-Tate Corp. Dbase data was imported directly into

the DB2 environment. A major design error, however, prevented the correct processing of the data. Even after eight hours we did not obtain a solution.

**Strength:** It can directly interface with Dbase files.

**Weakness:** The correct method of merging batch data is not obvious.

## ENHANCEMENT: D

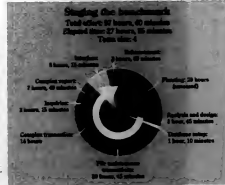
The enhancement was completed in a relatively short time. The results, however, could not be tested because the modified application abnormally terminated with an error condition that was not easily identified by the team or its support.

**Support:** Changes can be made easily.

**Weakness:** It has an unstable mainframe development environment.

The solution was developed on an IBM 3081K mainframe under MVS/3A, Release 2.2, CICS Release 1.7 and DB2 Release 2.2. The development team shared their environment with 140 other on-line users. With the exception of the Dbase data conversion, all development was done on the IBM mainframe with 3270-type terminals.

Details of the product are available from Pansophic Systems, Inc., 2400 Cabot Drive, Little, Ill. 60532 (800) 323-7335.



ven in clouded moonlight, the pair of golden ropes glowed as they hung silently from the towering castle ceiling. Suddenly, along one wall, a shadow began to move.

It was Nathaniel Hawkins, a most valiant and clever young lad from the valley below. He had come to retrieve these sacred golden ropes stolen from his village monastery by the evil knight. And there they were! Sixty feet long, hung three feet apart, and guarded by the knight's sleeping but savage panthers. Nathaniel inched closer, knowing if he jumped or fell more than 15 feet he would surely be caught. If not devoured. How does he recover nearly all the rope, equipped only with his courage and a knife?

Ingenuity seldom goes unrewarded. Trouble is, it usually takes a fair amount of necessity to trigger it. A large ladder would have made Nathaniel's task a lot easier. But silence was a prerequisite to success. So he had to work with what he had.

In our industry, a question being asked increasingly these days is, "Are we working adequately with what we have?" Or is there a tendency to condemn last year's box to the junk pile in the interest of chasing the brand newest bell or whistle?

Now, since we are a maker of such constantly evolving machines ourselves, another fair question to ask is, "Why would Wyse raise this issue in the first place?"

*For more information about any of the many Wyse products, as well as a complimentary poster of our 14-day Cerebral Aerobics Program, simply dial 1-800-GET WYSE. After all, you want to keep your organic personal computer in top shape, too.*

(And when are we gonna tell you how young Nathan reclaimed the ropes, anyway? In a moment. Business before pleasure.)

At any rate, the reasons we raise the issue of premature obsolescence are twofold. First, selfishly, to remind you that Wyse products are engineered to make obsolescence almost obsolete.

Our terminals, of course, are known for ergonomics that tend to be ahead of their time in the first place. Our new Decision PCs have surplus slots and bays so your configurations can change as your needs change. And our Series 9000i UNIX-based multiuser system is built on a unique architecture that can start with one 486 microprocessor and expand to include up to eight. Which results in over 160 MIPS of power. And all product lines are backed by a total service program to help ensure a long, productive life.

Secondly, we want to remind you (as if it were necessary) that things are tough out there. That the tighter we all run our ships, the better we'll all weather the storm. Whether that means recycling photocopy paper, carpooling to work or toughing it out with three-year-old PCs a little longer.

Of course, there are those times when entirely new equipment is entirely justifiable. Thank goodness. And in such instances, you'd be well advised to explore the many Wyse choices. Five monitors, 11 terminals, 10 PCs, and three series of advanced systems. All further evidence that ingenuity seldom goes unrewarded.

Speaking of which, were you as clever as our intrepid Nathaniel? He tied both ropes together at the bottom then scaled to the top of one. Next he leaned over and cut the other rope about a foot below the ceiling, tied it loosely around the rope he was on and let it slide quietly down to the floor. (The panthers barely stirred.) He then tied the one-foot piece into a loop, swung over to it, cut the remaining rope and threaded it through the loop. By holding both sides of the rope he quietly lowered himself to the floor, pausing only to untie the loose knot. He then pulled the rest of the rope (knot and all) down through the loop, caught it, and slipped off silently into the night. Not half bad for peasant stock.

If you need to be equally resourceful with your hardware problems, remember, chances are there's a Wyse solution.



From terminals, to notebook and workstation PCs, to advanced systems, Wyse offers one of the industry's widest product lines. The common denominators: advanced ergonomics, versatility, more power and features per dollar.

# WYSE

## NEW PRODUCTS SOFTWARE

**Database management systems**

Informix Software, Inc. has announced the availability of its products on Modular Computer Systems, Inc.'s (Modcomp) Real/Star real-time systems.

Informix database engines, fourth-generation programming tools and connectivity products have all been ported to the Modcomp systems, the company said. Real/Star computers run a real-time implementation of Unix System V.

The database engines cost between \$1,200 and \$32,000, depending on the number of users. The company's SQL tool

costs between \$1,200 and \$12,800. Informix Software  
4100 Bohannon Drive  
Menlo Park, Calif. 94025  
(415) 926-6300

The Ultimate Corp. has ported its Ultimate Plus Business Operating Environment to two new platforms.

The environment is now offered on Hewlett-Packard Co.'s HP 9000 Series 800 systems. It will also be available on the IBM RISC System/6000 workstation platform, according to Ultimate. The product includes a database management system with access to Pick Systems business applications.

The base package with support for eight users costs \$4,000. Additional ports cost \$415 each on the HP platform and \$435 each on the IBM platform.  
Ultimate  
717 Ridgedale Ave.  
East Hanover, N.J. 07936  
(201) 887-9222

**Applications packages**

Interactive Information Systems, Inc. has developed Version 8.4 of its Computer Interactive Integrated Manufacturing (CIIM) software for Oracle Corp.'s relational database management system.

The upgrade includes support for SQL\*Forms 3.0 in its accounting modules, among other new features, and of-

fers tighter integration of modules.

CIIM 8.4 runs on Unix workstations and VMS systems. It costs from \$50,000 to \$700,000, depending on configuration and the number of users.  
Interactive Information Systems  
Suite 120  
3716 E. Columbia  
Tucson, Ariz. 85714  
(602) 790-4214

Access International, Inc. has announced an upgrade to its Ordermaker remote order-entry system.

Ordermaker enables salespeople and customers to create orders off-line using laptop or desktop personal computers. The orders are transmitted to an IBM midrange system for processing. New features include electronic mail and a facility for listing similar products. Users can now download product information during order entry.

An unlimited site license costs approximately \$38,000.

Access International  
1853 Services Road  
Lansing, Ill. 60438  
(708) 895-3495

Gejac, Inc. has incorporated support for Hewlett-Packard Co.'s hardware lines in ARSAP/Unix, its system accounting software package.

ARSAP/Unix provides chargeback, resource management, project accounting and capacity planning for Unix systems. It runs on any network or data center that includes VMS and Unix equipment. All ARSAP/Unix functions are performed by the VMS system, freeing the Unix equipment for other tasks, the company said.

Prices range from \$8,000 to \$70,000, depending on platform.

Gejac  
8643 Cherry Lane  
Laurel, Md. 20707  
(301) 725-2500

Cincom Systems, Inc. has enhanced its manufacturing business system, Control Manufacturing.

Release 7.1 comes with a field-level help function and pop-up menus. The upgrade also includes a background transaction router and forecast management features.

The price ranges from \$175,000 to \$575,000 for the IBM mainframe version and from \$100,000 to \$400,000 for the Digital Equipment Corp. VAX version.

Cincom Systems  
2300 Montana Ave.  
Cincinnati, Ohio 45211  
(513) 662-2300

**Utilities**

Advanced Software Products Group, Inc. has announced RA/2 Version 1.3.3.

RA/2 is a software utility that helps users retrieve data from IBM RACF data bases under MVS. The new release includes the ability to list data sets and their protecting RACF profiles on-screen. A new catalog verification feature is also included.

It costs between \$9,500 and \$12,500.  
Advanced Software Products Group  
Suite 309  
2335 N. Yasmine Trail  
Naples, Fla. 33940  
(813) 648-1548

CICS Comet, a software utility that translates macro-level code to command-level

# Hats Off To IBM's Information Warehouse Strategy.



## NOMAD And MUST Software International Applaud IBM's Much-Heralded Announcement!

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NOMAD users — more than 350,000 worldwide — use NOMAD for a broad range of single- and cross-platform applications. For them, the benefits of this announcement are clear. The Information Warehouse framework offers a logical extension to their current use of NOMAD. Our hats are off to an announcement where everyone is a winner!

To receive a copy of our report on NOMAD and IBM's Information Warehouse strategy, please call 1-800-441-MUST. From Canada call collect, 1-609-896-9495.

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INTERNATIONAL  
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\*DB2 is a registered trademark of IBM International Corp. \*Products mentioned of International Business Machines Corporation.

code, has been released by Technology Software Concepts, Inc.

CICS Comet installs on any CICS system and converts macro calls to command code without source-code changes or program relinking.

Licensing starts at \$20,000.  
Technology Software Concepts  
Building 450  
16842 Von Karman  
Irvine, Calif. 92714  
(714) 863-7080

Kinco Information Systems has upgraded Squash, its file-compression utility designed for use with the IBM Application System/400.

Squash 2.0 offers average file size reductions of 75% to 90%, the company reports.

The product costs \$500 per machine. Users of Version 1.0 can upgrade free of charge. A lifetime guarantee of free telephone support and free upgrades is included.

Kinco Information Systems  
Suite 117  
120 Beverly Road  
Mount Kisco, N.Y. 10549  
(914) 241-7233

Chicago-Soft Ltd. has introduced two software packages for the MVS/ESA and MVS/XA environments.

The IPS/OPT Advisor is a personal computer-based program that tunes MVS performance by analyzing the characteristics of the work load. IPS/OPT Advisor ranges in price from \$5,000 to \$10,500,

depending on processor size.

PDQ/Page reportedly enhances user control of expanded and auxiliary storage. Pricing starts at \$7,500.

Chicago-Soft  
No. 402  
6232 N. Pulaski Road  
Chicago, Ill. 60646  
(312) 525-6040

Group 1 Software, Inc. has released the mainframe version of its correspondence personalization system, EZ-Letter 3.0. EZ-Letter produces a personalized letter for each addressee in a mass mailing. The new version includes both Batch and Online modules.

The Online interface and Help systems are based on IBM's Common User Access standards. In addition, EZ-Letter Online features a security facility that controls user access.

The software costs \$20,000 for EZ-Letter Online or \$35,000 for EZ-Letter Batch. Combined pricing is \$50,000.

Group 1 Software  
Suite 500  
6404 Ivy Lane  
Washington Capital Office Park  
Greenbelt, Md. 20770  
(301) 982-2000

### Computer-aided software engineering

Two new data input filters have been created for the Canonizer, a database design tool from Six Sigma Case, Inc.

Input filters allow users to load a data

format into the Canonizer, model it and generate output formats.

New filters are for Interactive Development Environments, Inc.'s Software Through Pictures and Digital Equipment Corp.'s RDB data formats. The Canonizer also handles SQL, IBM DB2 and other formats.

The filters cost from \$95 to \$345, depending on the user's hardware and software platform. The Canonizer costs from \$695 to \$1,795. It is available on DEC VAX systems and a variety of workstations running DOS or Unix.  
Six Sigma Case  
Suite 210  
13456 S.E. 27th Place  
Bellevue, Wash. 98005  
(206) 643-6911

### Compilers

Aleys, Inc. has announced availability of the Ada development environment for IBM's RISC System/6000 workstations.

The product includes the Developer's Toolkit, which consists of a symbolic source-level debugger and program viewer, a cross-reference generator, a recompilation aid and a source-code reformatter. The compiler has been validated by the U.S. Government Ada Joint Program Office, the company said.

The product will run under AIX Version 3. Pricing starts at \$6,000.

Aleys  
67 South Bedford St.  
Burlington, Mass. 01803  
(617) 270-0030

### Development tools

Admins, Inc. has developed Admins/SQL, a SQL interface for its Admins/V32 applications development tool.

With the addition of Admins/SQL, SQL applications can access and manipulate information in databases created under Admins/V32.

Admins/V32 is offered on VMS platforms starting at \$16,000 for a four-user license.

Admins  
432 Columbia St.  
Cambridge, Mass. 02141  
(617) 494-5100

### HARDWARE

#### Data storage

Zetaco, Inc. has announced the SKM series of storage subsystems for use with Data General Corp. MV computers.

The SKM models support up to seven drives per controller with more than 1G byte of capacity each. Average access time for the drives is 11.5 msec. Total capacity for each subsystem is just under 9.6G bytes. Disk-only and disk/tape configurations are available.

Pricing ranges from \$12 to \$14 per megabyte, depending on configuration.  
Zetaco  
11400 Rupp Drive  
Burnsville, Minn. 55337  
(612) 890-5135

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## Microsoft

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For the Power Seeker. 

MFLOPS are LINPACK double precision values run on AIX 3.1, FORTRAN Version 2.1 and AIX XL C Version 1.1 compilers were used for these tests. SPECmark is a geometric mean of the ten SPECmark tests. All prices current at publication. IBM and AIX are registered trademarks and RISC System/6000 is a trademark of International Business Machines Corporation. UNIX is a registered trademark of UNIX Systems Laboratories. SPARCstation is a trademark of Sun Microsystems, Inc. DECsystem is a trademark of Digital Equipment Corporation. SPECmark is a trademark of Standard Performance Evaluation Corporation. (NAGATHI HORRIBLE CHANDRAN) © 1991 King Features Syndicate, Inc. © 1991 IBM Corp.

**IBM**



# PCs & WORKSTATIONS

## COMMENTARY

Patricia Keefe

### Plaudits for planning



I'm about to bring your attention, for the second time in two weeks, to Pacific Gas & Electric (PG&E). We usually try not to do this because there are so many user installations worthy of ink. But it's a hard not to get excited about the computing vision there.

Just one story wouldn't allow me to share with you one of the most in-depth and well-thought-out migration checklists around. It even includes cost estimates for various stages.

The list itself is spelled out in a white paper circulated among PG&E employees. Keeping people informed, explaining why a decision was made and detailing how to go about implementing that decision form both the core of these papers and a relationship between PG&E's information technology staff and its clients.

What follows is but a glimpse into the richness of detail ranging behind a checklist of 18 items. I grouped them into five subject areas.

1) Workstation standards and directions were determined mostly around application needs, choice and support cost reasons.

Continued on page 47

## Smaller, cheaper still the rule

As 5¼-in. hard-drive technology fades, 2½-in. form factor comes to fore

### ANALYSIS

BY MICHAEL FITZGERALD  
CWI STAFF

It's just a rule of the computer industry. What is small and cheap today is replaced by smaller and priced-the-same tomorrow. As magnetic media goes, the 5¼-in. hard drive is a rapidly fading hard-drive form factor, with the 3½-in. form factor still gaining speed. But rushing to the forefront of hard-disk technology is the 2½-in. drive, analysts say.

"2½-in. drives are an extremely hot market now — 5¼-in. drives are not growing in unit terms, 3½-in. drives will likely peak in 1993, and after that you're talking about 2½ and 1.8," noted Crawford Del Prete, senior market analyst of storage, at Framingham, Mass.-based International Data Corp.

Fixed disk (in. format)	1990	1991	1992
8-30	1,400	2,006	901
30-60	86	1,840	5,640
60-100	-	380	1,190
100-300	-	-	270

Source: International Data Corp.

Del Prete and others said the 2½-in. drive is just starting to grow as a market. Currently, 2½-in. hard drives are prevalent mostly in notebook computers, where the small size and low

power demands of the drives make them a must. The cost and capacity advantages of 3½-in. and 5¼-in. drives make these prevalent on the desktop, but analysts said this will change over the next five years.

"We're going to see it on the desktop," Del Prete said. "That'll happen in 1994. There is less cost associated with a 2½-in. drive once the components are manufactured in volume."

Volume right now pales next to that of more established drive technologies, even the passé 5¼-in. hard-drive technology. Paul Weinstein, storage analyst at Kidder, Peabody & Co. in New

York, estimated that some 3 million 2½-in. drives will ship this year, compared with 24 million 3½-in. drives and 4.7 million 5¼-in. drives.

But the number of competitors is about to grow. Although 2½-in. inventor PrairieTek Corp. recently filed for bankruptcy and Comstar Peripherals, Inc. dominates the 2½-in. market today, companies from IBM to start-ups such as Aural Technology, Inc. are entering the market. Among the companies with announced 2½-in. drives, there are a number of well-established drive makers, including Western Digital Corp., Maxtor Corp., Seagate Technology, Inc. and Quantum Corp.

"It's healthy for both the end user and the drive market itself because it builds up a component infrastructure," Weinstein said. "It forces your drive people to all work extremely hard to capture business. When seven or eight guys enter a market it drives down costs, and that's what's

Continued on page 46

## IBM move creates XGA opportunities

BY MICHAEL FITZGERALD  
CWI STAFF

WHITE PLAINS, N.Y. — IBM's decision to license its Extended Graphics Array (XGA) hardware-based display controller (CWI, Sept. 9) ended months of speculation that IBM would do so and may signal a move toward widespread high-resolution graphics displays over time.

Analysts showed less excitement about IBM's agreement with Immona, a unit of SGS-Thomson, than they did in February,

when an IBM representative mistakenly said the firm would become an OEM of XGA, but they were still positive.

"By having a second source, other board manufacturers will now be able to provide an XGA solution and bring XGA to ISA computers [making it more universal]," said Jon Peddie, president of Jon Peddie Associates, a graphics consulting and research firm in Oakland, Calif. "The bad news is, XGA, in its current configuration, is not very interesting because it is an interlaced

display with only 1,024-by-768-pixel resolution."

Peddie said he thinks IBM has to take advantage of XGA's extendable architecture and push the product up to 1,280-by-1,024-pixel resolution. Even then, IBM may have some trouble making XGA as dominant a standard as its Video Graphics Array (VGA) is today.

"Price/performance will be in favor of Super VGA boards for the next couple of years," said Ken Lowe, an analyst at Dataquest, Inc. in San Jose, Calif. The

price differential comes in part because XGA uses video random-access memory (VRAM) instead of the more conventional dynamic RAM.

"There's a price penalty for moving to VRAM, and there's a performance benefit which increases with the [screen] refresh rate and resolution, but also with the amount of tasks the card will perform," Lowe said.

"I see XGA in the long run definitely winning out and becoming more predominant as an acceleration standard, though not necessarily buying VGA or Super VGA," he added.

Continued on page 50

## OCTOBER 1991

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

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**HARRIS  
ADACOM**

# Computers play part in addicts' recovery

BY GARY H. ANTHEIS  
OF STAFF

WASHINGTON, D.C. — Lerend Ragland started drinking at age 10, but he said alcohol never kept him out of school or off the job. At the U.S. Internal Revenue Service, he held down a word processing post, one he hoped would lead to a career in computers and accounting.

However, by the age of 32, Ragland's dreams were shattered by crack cocaine. "I started freshening in 1986, and by 1988, I was living to use, using to live," Ragland said.

Now, the recovering addict seems headed once more for a life in which he can combine computers and business.

## Training program

Ragland is one of about 20 people enrolled in an unusual new project in the alcohol and drug abuse program at the District of Columbia's shelter for the homeless. Residents enter a voluntary program of computer instruction after coming out of an intensive six-week detoxification program.

The shelter's drug and alcohol abuse program is run by a private foundation called New Way Recovery. A central tenet of the program is that recovering addicts must engage in interesting and useful activities, preferably ones that aid a transition into the local work force. Computer training is one of the activities.

The computer certificate gives shelter alumni "an end-run around the system," according to shelter Director Marsh Ward. "They have no track record and no references, and there's a big hole in their [job] history. This allows them to fill that in. If they can run a computer, they can get a job in this town."

Students go through six weeks or more of classes on topics such as MS-DOS, computer repair and use of various popular spreadsheet, word processing and database packages. The courses are taught by outside volunteers.

New Way Recovery has awarded certificates of completion to 86 out of 116 students enrolled in the past six months. Some have gone on to clerical computer jobs and some have gone to schools on the outside, others remain at the shelter while seeking jobs.

Ragland said he hopes to go back to school when he completes the shelter's drug program.

Most of the students come in with no skills and no careers, said Bob Wagner, a co-founder of the computer project. "They have lived in the street most of their lives, but they have a good deal of intelligence."



Computer training is one activity that may be chosen by recovering addicts at a Washington, D.C.-based drug and alcohol abuse program

Bob Brewin, a volunteer at the facility, added, "These people have limited educations, but they have street smarts — that's for sure. You take the street smarts and channel it, and you have smart people."

After graduating from New Way Recovery, Timothy Gray landed a job, as well as promotions, automating records for the U.S. Food and Drug Administration at Bethesda, Md.-based Maxima Corp. The job followed

24 years of alcohol and drug abuse, which began when Gray was in junior high school.

"The computers enhanced my esteem and my recovery," Gray said. "At that time, I was down on myself. I felt like I couldn't do anything anymore."

The shelter was recently given a comprehensive set of software for tutoring individuals toward a high school equivalency certificate, Wagner noted, but the software is gathering dust because the shelter lacks the computers and monitors needed to run it.

Wagner said the shelter had two old Wang Laboratories, Inc. computers when he entered its alcohol abuse program in 1985. They had been donated by a local bank, and later, the bank and another volunteer donated two IBM Personal Computer XT's.

Now, the shelter badly needs a laser printer and more PCs, especially Intel Corp. 80286- and 80386-based machines capable of running educational software that the old XT's cannot handle.

## Sunsoft offers Solaris, increases Unix applications

BY J. A. SARGE  
OF STAFF

Sunsoft, Inc.'s new operating system, called Solaris 2.0, for use on Sun Microsystems, Inc. workstations and Intel Corp. 80386- and 1486-based systems, will offer users more than 3,600 Unix applications when it goes on the market in mid-1992.

The operating system disk, announced earlier this month, will be delivered, along with supporting material in a box the size of a large phone book. Applications, which include a few personal computer applications such

as Lotus Development Corp.'s 1-2-3 spreadsheet, are available through Sun and third-party dealers.

Bundled into Solaris is Open Network Computing (ONC), Sun's version of a distributed computing environment, in which networked computers can run work from one computer to any idle CPU in the network. ONC works on any computer that has implemented Network File System, a layer of software developed by Sun but broadly licensed in the industry.

Fifteen applications are also incorporated. These include

Workgroup Calendar Manager, Multimedia Mail, Audio Tool, Network File Manager and Magnified Help.

Aiming at commercial users, Sun added several functions for large networks. There is disk mirroring in case of system failure, disk striping for spreading the I/O load across disks and disk concatenation, which allows systems administrators to move large files around the system.

Solaris will offer support for multiprocessing systems.

While Solaris is set to run on both platforms, it will be restricted in its use on the Intel

platform to "a few configurations," according to Sunsoft Vice President of Sales and Marketing Bill Larson.

Solaris 1.0, also known as SunOS 4.1.1, is the current version of Sun's operating system. Solaris 2.0 will be generally available in the first half of 1992. Solaris 1.0 now costs \$795 for a two-user license on computer hardware priced under \$5,000. On hardware priced from \$5,000 to \$10,000, the license is \$995, and for computers priced over \$10,000, the license is \$14,995. A server license will be available for \$2,795 to \$3,995.

## Now, mainframe-style editing on your PC with SPF/2

SPF/2 brings a true ISPF/PDF mainframe editing experience to PC users running OS/2.

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## Integral reduces hard drive to smallest size yet

BY KIM S. NASH  
OF WASH.

**BOULDER, Colo.**—Handheld and pen-based computers may become still smaller and lighter, thanks to a new 1.8-in. hard drive from Integral Peripherals, Inc., based here.

The company began shipping last month what it claimed is the first 1.8-in. hard drive on the market, ahead of Comex Peripherals, Inc., which had previously announced intentions to develop a drive of the same size.

Integral's 20M-byte Mustang 1820 and 40M-byte Stingray 1842 are target-

ted at pen-based and handheld computer makers. The drives are less than half the overall size and weight of 2½-in. drives currently used in such machines but can store the same amount of data, according to Integral.

Although no U.S.-based portable computer makers have signed on as Integral customers, four "major" Japanese firms have made commitments, said Steve Volk, president and chief executive officer of the firm.

The first miniature machine using the new Integral drive is expected from one of these Japanese companies at Comdex/Fall '91 next month, Volk said.

However, Volk refused to specify what kind of computer that will be or which company will unveil it. "All I can say is, [the computer] will be highly functional but smaller than a notebook."

Integral is currently talking with several U.S. companies that might buy the 1.8-in. drive, he said, but no deals have been finalized. Volk estimated that his company is about six months ahead of the competition. The drives are priced at \$385 for an evaluation unit.

Integral belongs to the Small Form Factor Committee, based in Costa Mesa, Calif., which sets standards for the manufacture of small disk drives, including 2½-

in., 1.8-in. and the as yet unavailable 1.3-in. model. Volk started the company in September 1990 with James Moorehouse, both of whom are former Princeton Corp. executives. Financially troubled Princeton, based in Logansport, Colo., invented the 2½-in. drive but has not announced a 1.8-in. version.

## Smaller, cheaper

CONTINUED FROM PAGE 43

going on," he added.

Del Prete said 2½-in. drives will continue to get thinner and hold more data.

"[The drives] are going to the ultrathin form factor, which is pushing the very limits of notebook technology and giving 1.8-in. drives a run for their money. The other side is they're pushing capacity up."

Higher drive capacities are starting to appear as well. Where earlier this year a 60M-byte hard drive in the 2½-in. package was difficult to find [CW, March 18], most manufacturers in the market have announced 80M- or 85M-byte hard drives, to be shipped later this year, and analysts said 200M-byte drives will be announced by the end of 1992.

Between now and then, 100M- and 120M-byte drives will appear, with some analysts saying firms may announce such products at Comdex/Fall '91 next month.

As for the future, the 2½-in. drive market "is just starting to blossom and has a long way to run," Weinstein said.

Technologies such as solid-state memory (the flash cards used in Toshiba Amer-

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**F**LASH is a very serious technology that is here to stay and will take over a lot of vertical applications currently exploited by DRAM and SRAM."

CRAWFORD DEL PRETE  
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ica Information Systems, Inc.'s notebooks, for instance) or compact disc/read-only memory (CD-ROM) do not look to take market share from 2½-in. drives in the near future, analysts said. They said solid-state memory will suffer from low capacities and high prices (1G byte of flash memory, were it technically feasible today, would cost \$100 per megabyte to end users, while a 2½-in. hard drive with a megabyte of capacity, such as those recently introduced by IBM, costs \$1.90 per megabyte, and CD-ROM technology will be too slow.

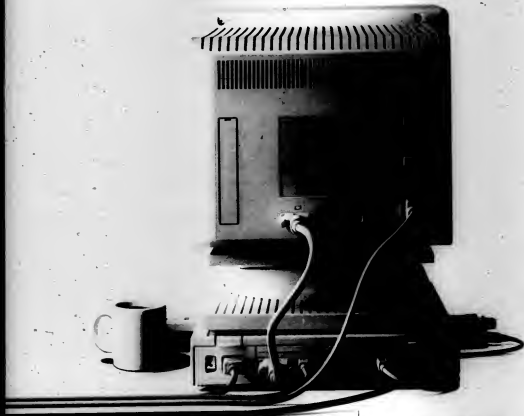
"You will see the market start to stratify," Del Prete said. "CD-ROM has got a home - it's good for data you don't want to change, and slow data will be relatively cheap when it becomes erasable."

"Flash is a very serious technology that is here to stay and will take over a lot of vertical applications currently exploited by DRAM and SRAM - such as robots working in factories or an 512K of memory," Del Prete added.

He also cited vertical platforms - such as the handheld computers made by Telesh Corp. and used by Avis Car Leasing to check out customers - as a market that solid-state memory will expand.



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# Failed merger spawns downsizing plan

San Diego Gas & Electric energy management moving to workstation-based networked system

## ON SITE

BY J. A. SAWAGE  
OF STAFF

SAN DIEGO — For three years, San Diego Gas & Electric Co. (SDG&E) has put off replacing its two 13-year-old minicomputers, awaiting a merger with Southern California Edison Co., which would have created the nation's largest energy company. In May, those hopes were definitively dashed by the state, which concluded there were no long-term benefits to customers.

Having delayed decisions for so long, Ben Bushner, energy management system operations supervisor at SDG&E, went into action. The day after the two utilities announced they would not appeal the state decision, he

put out a request for consultants to form a new plan for SDG&E's energy management systems. "Two working days later, the first consultant was here," Bushner said.

While it seems limping along with the former Gould, Inc.'s 32/75 minicomputers (bought by Encore Computer Corp. in 1989) and its proprietary operating system, Roger Baldwin, director of power operations for the utility, said the delay will be better for the company in the long run. "Two years ago we were still talking mainframe-based solutions. But in that two years, open systems have become realistic."

SDG&E said it now expects to move to a workstation-based networked system to replace the minicomputers by 1993.

Currently, the Gould machines process data from the utility's fossil fuel plants and nuclear plants, as well as what is being



fed onto its grid by other utilities and alternative energy producers. Every two to four seconds, the minicomputers match generating capacity with demand. The incoming and outgoing flows are tracked with the help of a huge mapping board in a glass-sided control room reminiscent of the war room in *Dr. Strangelove*.

While awaiting the final go/no-go on the merger, SDG&E was doing some work to keep the system afloat. For instance, "alarm and events" printers, which grind away, printing up everything the system does, were getting backlogged. So Baldwin put personal computers on the line between the printers and the minicomputers to "give the readouts a little intelligence." In doing so, the data became more manageable.

For research, Bushner said, the utility installed a local-area network with two servers, each with different protocols: one workstation-based, with an Open Software Foundation Unix operating system, the Moxit graphical interface and X Window System; the other PC-based. He said he hopes to get

enough experience with the two forms to find out which is best for the situation.

That research system has off-loaded some applications from the Goulds but is not yet in an operational mode. Bushner said he expected the parallel development to continue while waiting for the new system.

### Money saver

A system based on Unix workstations will be cheaper and allow for more flexibility, according to Baldwin, but the utility would not divulge just how much cheaper.

In the two years before such a system gets up and running, "We're just keeping our fingers crossed that the old systems make it," Baldwin said.

There is no backup if they do fail, he said, and the utility will be addressing an interim backup of a currently unknown nature. "We know we have to do it. It's a not good business case to have all your eggs in one basket."

## IBM move

FROM PAGE 43

IBM's agreement gives Ixos exclusive rights to market and manufacture XGA chip sets for the next 18 months, after which SGS-Thomson can develop XGA-compatible products. Ixos plans to ship its XGA chip sets in the first half of 1992. Until then, it will ship IBM-manufactured XGA chip sets for \$99 a unit in blocks of 5,000.

IBM never licensed its VGA technology, despite widespread claims of VGA compatibility. IBM's Alan J. Testani, division director of microsystems and development operations at the Entry Systems Division, said VGA-compatible products are compatible "in the eyes of the holder and developer," where Ixos' XGA will be "truly compatible."

Testani said IBM pursued the alliance with Ixos because "we can't do it ourselves and want

to have alliances to leverage our own investments."

Testani said IBM was likely to form other such alliances in the future and pointed to its agreement with Apple Computer, Inc. to develop a new operating system as just the most prominent of numerous IBM alliances.

The agreement may also lead to quicker development of an Ixos version of XGA, which currently works only on the Micro Channel Architecture. Ixos will soon ship to developers an

evaluation unit of the XGA chip for the ISA bus.

"I think the licensing agreement is a positive thing," said Bill Knapp, director of advanced graphics at Cirrus Logic, Inc. and chairman of the Video Electronics Standards Association's (VESA) technical committee on XGA. Both IBM and SGS-Thomson have representatives on Knapp's committee, which is close to finishing a draft of an ISA XGA standard.

What concerned Knapp was

any indication that IBM was moving away from its commitment to VESA. An IBM spokesman said IBM intends to remain fully involved with VESA, to ensure compatible third-party versions of an ISA XGA.

IBM is not limiting its push in the display market to XGA. It recently announced it will stop shipping its Personal System/2 8515-001 color monitor, replacing it with the PS/2 8515-021 monitor, which offers reduced magnetic emissions.

## Now Windows and DOS can share the same code

BY CHRISTOPHER LINDQUIST  
OF STAFF

Developing applications that run under both Microsoft Corp.'s Windows and character-based DOS while maintaining a similar interface can mean long hours of duplicated effort writing code

specific to each environment.

GFA-Basic, from GFA Software Technologies, Inc. in Salem, Mass., allows developers to write code for one platform, then port the code to the other with few modifications.

Steve Sedici, a signal analyst at a government contracting firm,

has been using GFA-Basic for MS-DOS for years. He recently decided to port some applications using the Windows product. He found the transfer to be extremely easy, though some problems can arise. "The only thing that isn't compatible is if you use one of the specialized features of either version," he said, such as using a resource editor to build a dialog box for Windows. "Obviously, nothing in the DOS world equates to that," he said.

### Simple to use

Users praised the ease of use and implementation speed of GFA-Basic. "I even have a man here who's a pretty good C programmer and got him using GFA," said Millar Brainard, owner of Millar Brainard Associates, Inc., a consulting firm in Sarasota, Fla. "And he now has decided he likes GFA-Basic far better than C."

GFA-Basic includes a variety of commands and functions intended to aid in creating graphical user interfaces. Because the command structures are the same for both the Windows and character-based versions of the product, code need only be reinterpreted to run in either envi-



GFA-Basic for Windows (above) and for MS-DOS share the same command structure, so code can run in either environment.

ronment. Character-based applications also have the advantage of having an interface with an appearance similar to that supplied by Windows.

Sedici said he was also very impressed with the execution speed of programs written in GFA-Basic. "For an interpreted language, it's extremely fast," he said. He also said he preferred GFA-Basic's more traditional programming style to other Basic-based Windows development tools, such as Microsoft's Visual

Basic and Within Technologies, Inc.'s Realizer.

Both GFA-Basic for Windows and GFA-Basic for MS-DOS come with a text editor, an interpreter and a copy-protected runtime kit. The Windows version is also capable of compiling code to an executable file.

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## AIIM White Paper

### INTRODUCTION

*Usually, when some of the largest industries in the world experience the need to conduct business in a more efficient manner, computer technology is not lagging far behind with an answer. So it should come as no surprise that when paper-intensive industries such as services, manufacturing and government cried out for paper relief, a high technology solution presented itself in the form of imaging.*

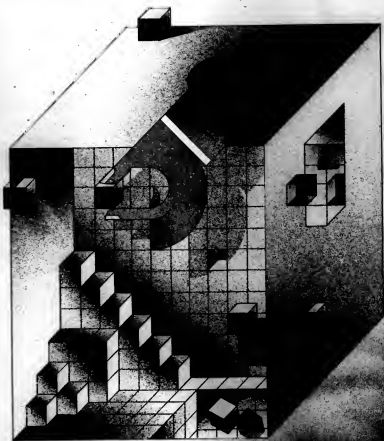
*Actually, imaging in its earliest micrographic incarnations of microfilm and microfiche has been around — and has served the business community well — for more than 50 years. It is during the past decade, though, that the modern electronic image management (EIM) systems with their amazing ability to store, retrieve and illustrate data have come to the fore.*


*The benefits of EIM can be found in both hard dollar savings and increased productivity, the two magic ingredients bottom-line-oriented top management demands as justification for new technology outlays. It is not unusual for users to experience time savings and productivity gains of up to 75%. Those numbers can assuage the most fiscally conservative skeptics.*

*Despite the many bright prospects for EIM technology, however, users must avoid the pitfalls of implementing it without proper forethought. Although there is a substantial body of actual and de facto standards that applies to EIM systems, users who implement systems willy-nilly may find themselves isolated on incompatible technology islands.*

*For those who eschew rash action in favor of a timely, well-considered approach, the manifest advantages of EIM and imaging in general are waiting to be realized. Industries and companies willing to rethink and reshape the ways they do business will reap competitive benefits.*

AIIM White Paper





IT IS SAID THAT HUMANS WILL BUILD A FIRE FOR ONE OF TWO REASONS: EITHER BECAUSE THEY ARE COLD OR BECAUSE THEY HAVE A MATCH. TODAY THE INFORMATION TECHNOLOGY COMMUNITY IS ABLAZE WITH IMAGING BECAUSE SOMEBODY STRUCK THE MATCH OF WORLDWIDE COMPETITION. THIS COMPETITION DEMANDED

## THE INFORMATION AND IMAGE MANAGEMENT INDUSTRY

NOT JUST INCREMENTAL PROCESS IMPROVEMENTS, BUT A WHOLESALE RE-THINKING OF THE WAY BUSINESS IS CONDUCTED. WHAT EMERGED WAS A CONFLUENCE OF TECHNOLOGIES THAT ENABLED ELECTRONIC IMAGE MANAGEMENT (EIM) TO FLARE UP FROM ITS WELL-ESTABLISHED BASE IN MICRO-GRAPHICS TO BECOME THE

MOST DYNAMIC ELEMENT IN A \$3.56 BILLION U.S. INDUSTRY. ■ FROM A USER POINT OF VIEW, IMAGING SIMPLY INVOLVES USING THE REPRESENTATION OF A DOCUMENT ON A SCREEN RATHER THAN THE PAPER DOCUMENT ITSELF. ASIDE FROM THE OBVIOUS BENEFIT OF ELIMINATING TEDIOUS PAPER SHUFFLING, IMAGING SAVES

## AIIM White Paper

space — original documents may be stored off site or disposed of altogether — and time.

It has been estimated that a typical worker in an accounts receivable operation takes 12 minutes to process a document. Of those 12 minutes, nine are spent searching for, retrieving and refiling the document, while only three are spent actually processing it. By eliminating those nine minutes, imaging drastically reduces the time required for nonproductive operations — in this case by 75%. It also eliminates the 3% misfile factor that paper-intensive operations must contend with.

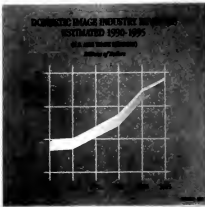
Image-based storage and retrieval is in its formative years; nothing new. Governments, manufacturers, health care providers and financial service organizations have been using micrographics as a way of storing and retrieving information for decades. Nor is the marriage of the computer and micrographics unusual. Computers have been outputting to microfilm and microfiche nearly as long as they have to paper, and the use of computers to retrieve micrographic images has been around for years. Moreover, micrographic technologies have been steady of unspectacular improvements as long as they have been in use. That dates back at least to 1945, when the National Microfilm Association — today's Association for Information and Image Management — was founded.

Micrographics products fall into three categories:

- Reel-based microfilm and film-based microfiche (also known as standalone micrographics)
- Computer output to microfilm
- Computer-assisted retrieval

### EIM BREAKTHROUGH

What gave the industry its biggest boost, though, was the emergence of EIM, a set of technologies that greatly extends the utility of images beyond such traditional uses as storage and retrieval and micropublishing. Electronic imaging allows such technological advances as instantaneous communication of document-



AIIM predicts the U.S. image industry will experience solid growth over the five half of the 1990s.

based information and multiple, simultaneous viewing of documents. Armed with these capabilities, operations analysts are reworking work flows in ways that are unthinkable with paper.

Inevitably, discussions of electronic imaging technologies revolve around storage media. This is because the problem with storing images in computer-readable form is the enormous amount of disk space they require. Unlike ASCII text, digitized documents consume massive amounts of storage even when efficiently compressed.

In the case of most EIM systems — with the exception of some magnetic-based disk versions — the optical disk is the most essential element. Without its economical, multi-gigabyte capacity it would be difficult to find a practical alternative.

By far the most common optical disk technology in use today for business-document imaging is the write-once, read-many (WORM) disk. This is an advantage for many applications, while others require one of the emerging rewritable optical disk technologies. For publishing, the most appropriate medium is the compact disk read-only memory (CD-ROM). CD-ROMs can be read, but cannot be written to with commonly used input devices. The process of making duplicates is very inexpensive, hence its attractive-

ness as a means of disseminating information to a wide audience.

Despite the critical role of optical disks, it is inaccurate to refer to EIM systems as "optical disk systems," both because there are other essential technologies involved, and because optical media may be used to store any digital information — such as data — in addition to images. These other elements include high-speed scanning systems, high-resolution displays, rapid and powerful compression techniques, telecommunications and laser printing. Nearly as crucial as the development of high-density storage media is the evolution of the microprocessor, whose vastly increased processing power is necessary to manipulate cumbersome document images.

As mentioned, optical disks are not the only disk medium used for electronic imaging. Some systems, particularly those in which rapid and frequent retrieval is necessary — but in which images are retained in the system only briefly — employ magnetic hard disks. In the future, moreover, some experts in technology development predict that optical disks will be supplanted by holographic crystals or some other arcane storage technology.

The fact remains, however, that most of today's electronic imaging relies on optical disks. Optical disks are generally stored in an optical jukebox, a device that works like a musical jukebox. When an image is requested, the jukebox selects the correct optical disk, robotically mounts it into a disk drive, the disk is read using a laser, and the appropriate image is displayed on a CRT in seconds.

### MARKET PENETRATION TRENDS

That growing in its many forms is increasingly penetrating the workplace can be seen in its pattern of uses. Of the \$3.6 billion in U.S. sales of imaging products and services in 1990, fully 25% went to transaction processing, such as credit card applications, while a mere 13% was used for archival or inactive storage. This reflects the growing use of EIM and the



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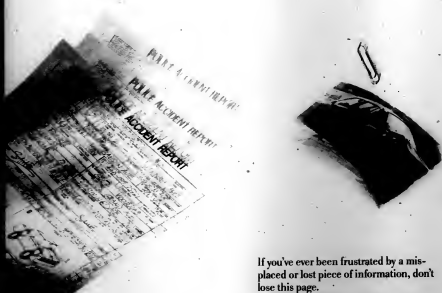
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low-growth role of micrographics. In between these active and inactive poles is a gray area, the active storage and retrieval of documents, which accounted for 20% percent of 1990 revenues. It is testimony to the longevity of micrographic technology that computer output microfilm still comprises 18% of the imaging pie. Remaining categories include indirect sales through resellers (15%), oversized drawing management — largely drafting drawings (6%), "other" (2%) and electronic publishing (1%).

Because EIM finds its greatest acceptance in paper-intensive operations, it is no surprise that banking, insurance and government have been its most ardent devotees. That pattern is changing, however. Over the past five years, there has been a steady decline in the portion of imaging sales that goes to financial services and government, not because use is declining in those sectors, but because other industries are finding hitherto undiscovered applications.

For instance, manufacturers are discovering a number of areas in which imaging technologies can boost productivity, one being systems documentation. Consider this: according to one vendor, the paper documentation for a submarine weighs more than the submarine itself!

### A ROBUST INDUSTRY

In an era that finds so many firms reeling from the effects of recession, particularly in the high tech arena, imaging is showing surprising resilience. This and many other facts describing the overall EIM and micrographics industry are documented in the Association for Information and Image Management's (AIIM's) annual study.

Despite recession and war, the outlook continues to be decidedly positive. The compound annual growth rate for the entire U.S. industry over the next five years is projected to be 28%, with no segment declining or even remaining flat.

EIM drew nearly even with micrographics in revenues in 1990, generating \$1,307,000,000 compared with micrographics' \$1,422,000,000. All indications are that 1991 is the year in which EIM sales will exceed those of micrographics. In addition to the revenues from EIM and micrographics, other industry revenues came from services (\$61 million) and software (\$70 million). Revenues reported

by AIIM are based on the survey results from the association's 500 member companies, which comprise nearly the entire U.S. industry.

End users reported bullish spending for 1990. So bullish, in fact, that their reported acquisition of imaging products and services slightly exceeded revenues claimed by imaging vendors and service providers for that same period. In all, 861 end users participated in the survey. As a group they averaged nearly \$850,000 in annual expenditures for imaging products and services. Their responses to both quantitative and qualitative questions tended to fall into distinct patterns, depending on which broad sector of the economy — manufacturing, government, or services — they belonged to.

All users were in agreement on four main points.

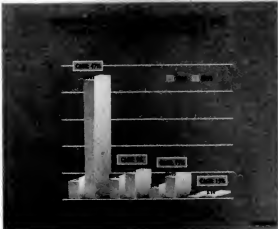
- Cost is a very important consideration in making imaging purchase decisions.
- A technology needs to prove itself before end users will implement it.
- Micrographics will remain a viable imaging technology over the next decade.
- End users need to be better educated on the range of imaging alternatives.

As would be expected, the manufacturing, government and services groups

rated the various EIM benefits differently. Service industries reported that they were principally interested in imaging because of its potential to improve customer service. Manufacturers were chiefly interested in improving access time. Government agencies were looking for a way to reduce the constantly-expanding need for physical storage space.

The other factor that correlates closely to the use of imaging products and services is the extent to which organizations use paper. Not surprisingly, the more they use, the greater their need for imaging. The service segment, consisting of insurance, health care, banking, financial services and miscellaneous services, such as advertising and publishing, is by far the imaging world's biggest spender.

Manufacturing firms, while showing the lowest 1990 average expenditures for imaging, also report being the least satisfied with the imaging products they are currently using. As a result of this need for enhanced products, manufacturers plan to increase their imaging expenditures by 54% from 1990 to 1991. The spending won't be spread evenly, however. Manufacturers will double the dollars they allocate to EIM, while their micrographics spending will remain flat. This



Electronic image management systems revenues have pulled even with those of micrographic systems and are projected to far exceed them by 1995.

# A Not So Subtle Message From End Users To MIS. HELP!

Imaging solutions are no secret any more. The word is out. And companies from Toronto to Tokyo are reaping the benefits of imaging—in areas ranging from records management to workflow automation.

That's the good news.

The bad news is, now your end users are demanding imaging too, and they're counting on you and your MIS people to deliver.

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Now back to the good news, very good news: Wang can help. Thanks to Wang's OPENimage-Host products, you can image enable the applications that drive your business—applications you rely on every day—and step up to new levels of performance, productivity, and customer satisfaction.

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# *image management system* **Imagic!**

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Imagic has changed all that. It's an inexpensive software-based imaging system for the PC.

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But don't let its simplicity

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devices. So you can easily integrate it into your existing

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## AIIM White Paper

may be a signal that the improving price-performance of EIM is now attractive to even the relatively less paper-intensive manufacturing sector.

Government is the only sector in which imaging expenditures are not expected to grow. Federal government organizations report that their spending for imaging products will decrease by 8% during the 1990-1991 time period. Increasing pressure to reduce government spending on all levels may be the reason.

### THE AIIM SHOW: AN ANNUAL BAROMETER

The high point on the annual image industry calendar is the AIIM Show and Conference. Far and away the largest gathering of imaging systems and professionals in the world, the show and conference has come to be regarded as a barometer for the entire industry. Furthermore, many exhibitors time their new product announcements to coincide with the event, making it a good indicator of the pace and direction of R&D in the industry.

Despite the uncertain economy and war in the Persian Gulf, attendance at the product exhibition grew from last year's 25,600 to 33,500. At the concurrent conference, attendance rose from 2,469 to 2,800. An informal survey of exhibitors suggests, moreover, that these were high-ranking people, and that they came not out of curiosity, but to buy. "These people are well educated," said one hunched but happy exhibitor. "There are not many tire kickers."

The breakdown of exhibitors shows that 183 were primarily EIM vendors, 65 were micrographics-based and 23 were both.

As happened at previous shows, great emphasis was placed upon compatibility — integrating imaging applications with other applications, especially those in the Microsoft Windows 3.0 environment. Minolta Corp. introduced the MiMS 3000, Wang announced Windows enhancements to the Wang Integrated Image Systems line, and LaserData, Inc., put its LaserView Windows on display. Wang also announced support for another Windows-based system, the Apple Macintosh. Reduced start-up costs and the gradual development of a commodity market are allowing a wealth of smaller firms to enter the market with "bottom-up" desktop products, often based on Windows 3.0.

Hybrid systems — so-called electronic micrographics products that use film as a storage device but scan the film to retrieve the image — were also in evidence at the show. Their announcements were largely refinements and extensions to product lines introduced at past shows.

"Incremental advances" was the catch phrase among industry pundits passing in the aisles. The new products and companies at this year's show represented the logical extension of trends evident in past years. The influx of the traditional computer companies — a trend begun with the presence of Wang Laboratories and completed with the addition of IBM, Digital Equipment Corp. and Unisys Corp. — continued this year with an exhibition from Apple Computer, Inc.

There was also representation from database companies. For instance, Informix explained the difference between simply pointing to images with databases and storing images within databases.

### DEPLOYMENT STRATEGIES

As imaging systems become increasingly popular, users are asking themselves how far they want to go with the technology. Should systems be enter-

prise-wide or departmentally based? Should they be used in workflow environments that automate all steps in business operations, or should they be limited to filing and retrieving documents?

If few users are involved, if the number of functions required of the system is limited, or if a pilot project can be expanded, departmental imaging systems are appropriate. Such systems may be based upon standalone microcomputers. Or, as is increasingly the case, several microcomputers may be linked together on a local area network (LAN). In a LAN-based system, one or two computers act as the host and are linked via Ethernet or Token Ring, for example, to image-capable workstations. LAN-based systems must also incorporate operating software for the network.

Networked systems are capable of more advanced applications than their standalone counterparts. Standalone systems are little more than electronic file cabinets; networked systems allow users to route and track correspondence. Even more importantly, they facilitate the most sophisticated use of image systems, workflow applications.

In the workflow environment, man-



The most ardent image system users continue to be in the financial, manufacturing, insurance and government sectors.



**WorkFlo Business System** software electronically paper clips documents together so they never get separated.




**WorkFlo Business** System software automatically links, prioritizes, routes, and manages document images for increased productivity and efficiency.



**WorkFlo Business System** software queues image files for processing according to priority or workload.



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## AIIM White Paper

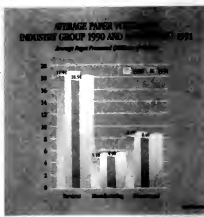
agers may distribute work among staff and easily access correspondence and similar data. The organization invests itself in an electronic environment that consolidates and automates all steps in the business process. For instance, in the case of a mortgage loan application, an EIM system would facilitate the title search, locate any appraisal, locate a photo of the house in question, etc., all tasks that may have formerly been done by many different people. Although the workflow concept is optimized in large-scale enterprise-wide applications, small systems can also provide some workflow function. This is true in department-specific applications such as accounts payable.

Before implementing departmental imaging systems—which can become isolated islands of technology if they are not planned properly—users should consider future expansion. If other departments or the entire enterprise automates along slightly different technology lines using different platforms or communication protocols, the organization may end up with a hodgepodge of disjoint departmental and standalone systems.

### OPEN ARCHITECTURE AND STANDARDS

Expandability, compatibility and communication all fall under the rubric "Open Architecture." Open architecture is the most important concept to impact electronic imaging in the last three years. Unfortunately, it is the subject of widespread misinterpretation and misinformation.

When vendors speak of open systems, they often address them in terms of their own company's proprietary product environment. In a true open-architecture software environment, imaging software runs indiscriminately on multivendor hardware. When this is the case, users save money because they can purchase the least expensive hardware in a compatible and competitive marketplace. A truly open architecture also embraces systems integration. This allows systems integrators of



The services industry, which consumes more paper than manufacturing and government, also is a much heavier electronic image management user.

third-party vendors to seamlessly add new platforms or peripherals to existing systems. This also requires thorough system documentation.

If an EIM system can be easily integrated with other application software, it is said to have an open application interface. Such a system may interface either with other off-the-shelf packages or with code written by users. Open application interfaces allow users to modify systems to match their own unique requirements.

At a time when many corporations rely on national and global, as well as local communication, telecommunications is a critical factor in successful EIM and micrographics systems. Electronic micrographics systems that store digital images on microfilm, like FAM systems, can be integrated into today's networks.

The importance of standards in electronic image management is hotly contested. For instance, many observers feel that the relative lack of standards pertaining to formatting optical disks has significantly inhibited the broad acceptance of EIM. Others believe the standards issue is a red herring because there are standards relating to formatting as well as all aspects of imaging.

Standards governing the compression and decompression of electronic images have received much attention. Some ex-

perts say that existing CCITT Group 3 and 4 are adequate, but not everyone agrees. For instance, different vendors handle certain details of the CCITT specification differently, so that two systems supporting G3 compression may still be unable to read each other's image data. An AIIM committee is currently developing a standard implementation of the algorithm for document imaging applications.

The trend among vendors to make their imaging software and hardware offerings more open is nearly universal. No one yet offers systems that are truly open, but users are demanding them.

### CASE STUDY: BURROUGHS WELLCOME CO.

Each day, the Clinical Data Processing department at pharmaceutical company Burroughs Wellcome Co. receives approximately 2,500 pages of clinical trial data submitted by physicians and others. Quick processing is critical; the company must be able to respond immediately if test results indicate a trend of adverse reactions to a drug compound. In addition, incomplete or incorrect documentation of trial results may delay FDA approval, which could cost the company hundreds of thousands of dollars.

Burroughs Wellcome needed to ensure that any extension to its information processing environment would make appropriate use of its existing systems, which included 1,000 PS/2 workstations and more than 2,000 other PCs, Macintoshes and laptops. The company also wanted to employ an Ethernet LAN for high-volume image traffic and an existing IBM Token Ring network to provide image services to end users.

A FileNet Corp. system closely integrated with Burroughs Wellcome's existing mainframe and PC workstation platforms was installed in February 1990. A complex workflow process was automated using FileNet's WorkFlo Business System, an integrated package of document image processing software modules and development tools.

At the start of this workflow process,



## The Information and Image Management Industry

each page of the incoming case report form is indexed and verified. Rigorous controls ensure that no pages are ever lost, misfiled or out of file. The forms are automatically routed to professional editors who review the documents for thoroughness and completeness. Medically trained staff, called monitors, also may be consulted to validate data. Any subsequent adjustments must be filed using special change authorization forms, which are printed off the imaging system and mailed to physicians as needed.

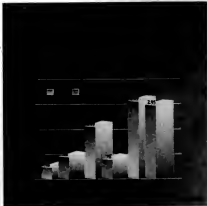
The system also keeps track of when change forms are sent, enabling Burroughs Wellcome to maintain an accurate schedule of update requests. Once the change authorizations arrive, the system electronically "paper clips" the forms to the original pages, providing an audit trail of all changes made to documentation.

For Burroughs Wellcome, which prides itself on high quality, an integrated image solution is helping to improve processing efficiency, ensure information accuracy, and increase professional productivity. By using the company's existing information systems network, the imaging system provides a way for Burroughs Wellcome to streamline and effectively manage the most critical portion of its product documentation. And for a pharmaceutical company, that is a matter of life and death.

### CASE STUDY: GOSHEN RUBBER COMPANIES

Goshen Rubber Companies, a privately held firm based in Goshen, Indiana, that manufactures seals and gaskets that it markets primarily to "tier two" auto industry suppliers, has been putting document imaging technology to work in the manufacturing environment for more than a year. Every month, the organization uses imaging to track and process roughly 600 price quotes averaging five or six pages each.

Goshen Rubber has been a Wang Lab-



One billion dollar companies are expected to average just under \$3,000,000 each on electronic image management systems expenditures in 1991.

oratories Inc. equipment user for over 10 years, and much of its Wang Integrated Image Systems (WIIIS) product has been installed on existing hardware, including the company's Wang VS 1000 Model 50 mid-range computer. With the implementation of imaging, Goshen has added a two-drive optical jukebox and 33 image-capable terminals to its complement of hardware.

"What imaging brings to the table," explains Jim Holsopple, Goshen's manager of data processing, "is the ability to pass quickly from workstation to workstation documents that used to be passed by hand."

According to Holsopple, the imaging application proved itself in three primary ways. First, the average time to process a quote has been cut nearly in half from 15 to eight days. Second, information no longer gets misplaced. Third, accountability has improved. Now, having better control of the location and status of any particular quote, Goshen can, within minutes, tell a potential customer the exact status of that quote. "If the customer calls and says, 'My requirement has changed, I need that quote by tomorrow,' then we know we can say, 'This quote has become hot. We have to move it.'"

### SYMBIOTIC VENDOR ALLIANCES

In the imaging world, vendors who would otherwise harmfully compete with each other realize comparative advantages by banding together in strategic alliances. These alliances are made possible by the volume and variety of technologies critical to imaging, and the resultant need to customize them for specific requirements. Almost nobody is trying to go it alone. Smart vendors are playing to their strengths and filling in the gaps by aligning themselves with companies that have complementary expertise.

IBM is an excellent example of this phenomenon. It is aligned with a raft of small software firms that tailor IBM imaging systems to the specific needs of vertical markets.

Such tailoring requires extensive knowledge of the particular markets. This knowledge is much more easily acquired by making friends with people who already possess it than by amassing it from the ground up. Digital Equipment, Unisys and Wang have made such alliances. Even when it comes to assembling hardware, both large and small vendors play the role of system integrator, purchasing terminals, scanners, drives, jukeboxes and printers through various OEMs.

Eastman Kodak and Anacom hammered out a high-profile micrographics alliance calling for the two firms to cooperate in the development and marketing of computer output microfilm.

### SUMMARY

This is clearly an industry on the rise. Like others, its future will be determined largely by user acceptance. If users are willing to embrace imaging technology—which means dramatically changing the way they do business—the imaging industry will be robust for many years to come. Given the productivity gains and financial savings available through imaging systems, it seems only a matter of time before they become a competitive necessity.



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## The Wonder Fiche Digests Data Faster Because It Takes Ferocious Bytes.

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nearly all of America's 1,000 largest corporations have a relationship with us.

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**GOVE FICHING**

# Procomm Plus: Easy to use, low price

**Technology Analysis** — A roundup of expert opinions about new products. Summaries written by freelance writer Suzanne Weisat.

**V**ersion 2.0 of Datastorm Technologies, Inc.'s Procomm Plus adds terminal emulations, protocols and a slick interface that reviewers claimed makes even the most mundane communications tasks fun.

**Ease of use:** The pull-down menus are intuitive. There is also mouse support and ALT key combination shortcuts. Installation is highly flexible, with over 100 customizable session parameters. There are also 100 pre-configured modem setup strings. Context-sensitive Help does not make up for the incomplete documentation. **File transfer:** Zmodem support is new but not reliable. The dialing directory, file-transfer status window and remote mode are well done.

**Multitasking:** There is no support for background transfers, but the program can run as a DOS application file for the Microsoft Corp.'s Windows or Quarterdeck Office Systems' Desqview.

**Service and support:** Free, but not toll-free, technical support is available from 9 a.m. to 5 p.m. CST. **Value:** Procomm Plus (\$11.95) is not the most sophisticated package, but its ease of use and low price make it ideal for basic communications.

## Datastorm Technologies' Procomm Plus 2.0

Reviews	Ease of use	File transfer	Multitasking	Service and support	Value	Overall
PC Magazine 4/28/91	Excellent	Excellent	NC	Excellent	NC	Value
PC World 4/91	Excellent	Excellent	NC	NC	Excellent	Best buy
EAT Times 11/9/90	Good	Good	NC	NC	Value program at lowest cost	A++
<b>Users</b>						
Bob Neely, University of Missouri						Supports wide range of hardware
Carole Pella, Davidson Systems, Inc.						Excellent file rates
Luke Orsini, IBM Co.			NC			Best general-purpose package
<b>Analysts</b>						
John Smith, Workgroup Technologies, Inc.						Excellent program at reasonable price
Jerry Caron, Fastlane Technical Reports						High-end capability
Diana Dushoff, Wide Page Book						Good terminal emulation

Key: Very good Good Fair Poor

Reviewers evaluate on a scale from 1 (best) to 5 (worst). NC = No comment. EAT Times reviewed Version 1.1A, rating based on 1-to-10 scale.

## Vendor background information

According to Datastorm, Procomm Plus has an installed base of 500,000 to 750,000 copies. The company projects sales from \$15M to \$21M this year. Datastorm is privately held. It was established in 1986 and has 77 employees.

## Datastorm responds

**Kyle Nichols, technical support supervisor:** **Ease of use:** People either love our documentation or hate it.

**File transfer:** We issued a maintenance release to take care of high-speed Zmodem transfers. The network version allows you to share resources. We have no bug reports on faulty Digital Equipment Corp. emulations.

# Mirror III: Many features but lacks power

## Softklone's Mirror III

Reviews	Ease of use	File transfer	Multitasking	Service and support	Value	Overall
PC Magazine 4/28/91	Overkill/Inconvenient	Moderate strength	Learn as you go	NC	NC	Does it all, does it well
PC World 4/91	Poor	Excellent	Fair	NC	Fair	Procedural interface
PC Week 4/23/91	Satisfactory	Hard time understanding the use	NC	NC	Reasonably inexpensive	Capable program
<b>Users</b>						
Deanne Graber, Graham, Inc. Computer Services			NC			Powerful scripting, easy to use
W. P. Patterson, Florida State University Computing Center						Flexible
John Waters, Company withheld		NC				Good for remote access
<b>Analysts</b>						
John Smith, Workgroup Technologies, Inc.						Not powerful but attempts Middle of the road
Jerry Caron, Fastlane Technical Reports						Scripting could be better
Diana Dushoff, Wide Page Book						

Key: Very good Good Fair Poor

Reviewers evaluate on a scale from 1 (best) to 5 (worst). NC = No comment.

## Vendor background information

Softklone has been publishing and shipping Mirror since December 1985. It has a worldwide installed user base of 800,000 copies. The firm has 32 employees and has offices in the UK and Germany. Softklone, a private company, does not disclose financial information.

## Softklone responds

**Keith Acherman, vice president of marketing:** **File transfer:** We are releasing an update that provides internal Zmodem support. **Value:** Because Mirror III is easy to use, people assume it is a soft product.

Its scripting language has great depth. It supports a wide range of protocols and terminal emulations.

**M**irror III Version 2.0 from Softklone Distributing Corp. offers a wide range of useful features. Unfortunately, reviewers said, none of them is very powerful.

**Ease of use:** The pull-down menus are easy to use, but their inconsistency of style can be confusing. Mouse support is a plus. Users can build scripts to automate the log-on procedure for accessing on-line services. Installation is easy and flexible. There are 50 built-in modem setup strings to choose from.

**File transfer:** File-transfer features are strong, with support for Microcom Networking Protocol error control and data compression, lots of terminal emulations and protocols. There's a file-overwrite safety feature and a file-transfer status display. Support for Zmodem is offered only through a slow add-on module. The package offers a full-featured dialing directory and remote mode.

**Multitasking:** Mirror III supports background operation but uses so much memory, there is no room for other tasks.

**Service and support:** Free, but not toll-free, technical support is available 9 a.m. to 6 p.m. EST. There is a 60-day money-back guarantee.

**Value:** Reviewers liked the ease of use and range of features but lamented the inconsistencies and lack of depth. Mirror III 2.0 costs \$149.

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## NEW PRODUCTS

## Systems

Cerams, Inc. has introduced an accelerator card for Sun Microsystems, Inc.'s Sparcstations.

Turbowarp increases system performance by expanding the workstation's fast-access memory. According to the company, performance is two to 30 times faster, depending on the application.

A 40M-byte version of Turbowarp costs \$1,745. An 80M-byte version costs \$3,395.

Cerams  
2260 Executive Circle  
Colorado Springs, Colo.  
80906  
(719) 540-8500

Kinc Electronics, Inc. has announced the availability of Sparcchip Lite, a board-level upgrade for Sun Microsystems, Inc. workstations.

Sparcchip Lite raises Sun 3 and 4 performance significantly, according to the company. It includes an adapter that supports S-Bus as well as VME peripherals.

The product is priced under \$10,000 for an upgrade rated at 25.5 million instructions per second (MIPS). A 28.3 MIPS ver-

sion is also available.

Kinc Electronics  
3193 Tech Drive N.  
St. Petersburg, Fla. 33716  
(813) 573-1120

## Software applications packages

Ashlar Vellum, a computer-aided design software package from Ashlar, Inc., is now available on the Silicon Graphics, Inc. Iris 4D workstation platform.

Ashlar Vellum includes Integrated Parametrics, a feature that allows users to sketch rough designs and add exact dimensions later, with redrawing adjustments performed automatically.

The list price for the Silicon Graphics version is \$1,995. The product will be sold for \$995 through the end of this month.

Ashlar  
1290 Oakmead Pkwy.  
Sunnyvale, Calif. 94086  
(408) 746-1800

## Peripherals

Viewsonic announced that it has begun shipping a 17-in. noninterlaced monitor with 1,280- by 1,024-pixel resolution.

The Viewsonic 7 displays unlimited colors and offers 0.28mm dot pitch, the company said. The display costs \$1,995.

The company has also announced the availability of the Viewsonic 5+, a 14-in. noninterlaced monitor with 1,024- by 768-pixel resolution. The Viewsonic 5+ features a 70-Hz refresh rate and 0.25mm dot pitch. The price is \$999.

Viewsonic  
12130 Moss Drive  
Santa Fe Springs, Calif.  
90670  
(213) 946-0711



AcerLaser 11G produces 256 shades of gray

A gray-scale laser printer has been announced by Acer Peripheral Products, a division of Acer, Inc.

The AcerLaser 11G produces up to 256 shades of gray without dots or dithering, the company said.

The product costs \$1,995.  
Acer Peripheral Products  
Suite 100  
101 Business Park Drive  
Skillman, N.J. 08558  
(609) 924-1153

Pacific Rim Data Sciences Corp. has announced a laser printer emulation software package called the BJFCL II.

The software allows Canon Bubblejet printers to emulate a Hewlett-Packard Co. Laserjet system. BJFCL II prints full-page text and graphics at 300 dot/in. resolution.

BJFCL II requires at least 1.5M bytes of expanded memory and 2M bytes of available disk space.

The product costs \$99.  
Pacific Rim Data Sciences  
47307 Rancho Higuera  
Drive  
Fremont, Calif. 94539  
(415) 651-7935

## Software utilities

Black & White International, Inc. announced that it has added support for Fox Software, Inc.'s Fupro 2.0 to its Dr. Switch-Application Snapping Extension (ASE) utility.

Dr. Switch-ASE makes database applications resident in random-access memory. The new

version also adds communications-port monitoring for remote activation of RAM-resident programs.

The utility costs \$179.95. Free upgrades will be sent to recent purchasers of Version 1.0. Black & White International  
23 W. 88th St.  
New York, N.Y. 10024  
(212) 787-6633

## Macintosh products

Dow Jones Information Services has released an upgraded version of its Market Analyzer Plus analysis software package for use with the Apple Computer, Inc. Macintosh computer.

Designed for personal and professional investors, Version 2.0 gathers and analyzes market information from Dow Jones & Co.'s interactive business news and information services.

The product lists for \$395 and requires a Macintosh Plus or later system running at least System 6.0.2 and Finder 6.1.

Dow Jones Information Services  
P.O. Box 300  
Princeton, N.J. 08543  
(609) 520-4638

Symantec Corp. has upgraded its Think C and Think Pascal devel-

omment environments for the Apple Computer, Inc. Macintosh.

Think C 5.0 offers a rewritten optimizing compiler. It is fully compliant with Apple's System 7.0. Think Pascal 4.0 is also compliant with System 7.0 and includes an Instant Project element that creates projects and loads libraries with a single command.

Think C costs \$299. Upgrades are available for \$89. Think Pascal costs \$249; \$69 for an upgrade.

Symantec  
10201 Torre Ave.  
Cupertino, Calif. 95014  
(408) 253-9600

TGS Systems Ltd. has released Version 2.5 of its Prograph visual programming environment for the Apple Computer, Inc. Macintosh.

The updated version includes a database engine and high-level support for Apple's System 7.0. Prograph also offers enhanced editor/interpreter facilities.

Pricing is set at \$495. Upgrades cost \$49.99.  
TGS Systems  
Suite 200  
2745 Dutch Village Road  
Halifax, Nova Scotia  
B3L 4G7  
(902) 455-4446

## Board-level devices



Eventide's WKPB board takes one expansion slot and gives back 8M bytes of RAM

Eventide, Inc. has made available an 8M-byte memory upgrade board for Hewlett-Packard Co. Series 200, 310 and 320 systems.

The board uses a single expansion slot. It is priced at \$2,995.

Eventide  
One Aisan Way  
Little Ferry, N.J. 07643  
(201) 641-1200

Rasterops Corp. has created the Rasterops Sparc Card TV, an adapter providing live 24-bit color video capability for Sun Microsystems, Inc.'s Sparcstations.

The single-slot card allows users to view live video on a movable, resizable window on

the workstation's display. It also provides frame-capture capability.

The adapter costs approximately \$2,000.

Rasterops  
23500 Walsh Ave.  
Santa Clara, Calif. 95051  
(408) 562-4200

Hydra Systems, Inc. has announced delivery of Andor One, an add-in board allowing personal computer users to run Apple Computer, Inc. Macintosh applications.

The product allows the PC's floppy drive to read Macintosh software disks. It also includes an AppleTalk-compatible connector. It runs at twice the speed of the Macintosh Classic, according to the firm.

Andor One costs \$995.  
Hydra Systems  
13440 S. Saratoga-Sunnyvale Road # 106  
San Jose, Calif. 95129  
(408) 253-5800

## Database management systems

Empress Software, Inc. has ported its Empress relational database management system to Commodore Business Machines, Inc.'s Amiga 3000UX under

Unix.

The Empress system offers SQL, a report writer and a fourth-generation language-based applications generator. It also provides X Window System capabilities.

Pricing ranges from \$1,400 to \$4,200, depending on the number of users and options included.

Empress Software  
6401 Golden Triangle Drive  
Greenbelt, Md. 20770  
(301) 220-1919

## Development tools

Decision System Software has announced the software development tool Knowledge Shop.

Knowledge Shop allows non-programmers with expertise in a certain area to produce expert system code modules. These modules emulate the user's reasoning process and can be embedded in applications by programmers.

The code is generated in C language and can be ported across multiple platforms, the company reported.

The product costs \$295. It runs on personal computers. Decision System Software  
160 West St.  
Cromwell, Conn. 06416  
(203) 632-7570

Objectcraft, Inc. has announced an upgrade to its Objectcraft computer-aided software engineering tool for personal computers.

Version 2.0 can import existing C++ language code into the Objectcraft environment, according to the vendor. It also adds facilities for printing diagrams and for writing C++ methods outside the environment.

The new version costs \$399. Registered users can upgrade for \$99.

Objectcraft  
Suite 118  
2124 Kittredge St.  
Berkeley, Calif. 94704  
(415) 540-4889

California Software Products, Inc. (CSPI) has announced a product trade-in offer for all IBM Personal System/2 RPS II Application Platform and Development Toolkit agents, software suppliers and users.

CSPI offers a \$3,000 trade-in for the PS/2 RPS II Application Development Toolkit against full development versions of Baby/400-AS Multisuser. California Software Products  
525 N. Cabrillo Park Drive  
Santa Ana, Calif. 92701  
(714) 973-6440

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# NETWORKING

## NETWORK SHORTS Lance+ lands at spin-off

Micro Technology, Inc., has spun off a network management software company called Lance+ that will assume responsibility for Micro Technology's Lance+ product line for managing multivendor distributed networks. Lance+ will reportedly focus on adding systems management to Lance+.

Start-up firm Unifi Communications Corp. in Billerica, Mass., announced that it has received a patent for its Phaserver technology. Phaserver allows telecommunications customers to use computers on their own premises to program and control call routing in the public telephone network.

Timespan, Inc. has recruited Floyd E. Ross from former parent company Unisys Corp. as a senior staff engineer. Ross, who is also vice chairman of the Fiber Distributed Data Interface (FDDI) standards subcommittee of the American National Standards Institute, will reportedly oversee the architecture of Timespan's internetworking products. While he was at Unisys, Ross headed up FDDI development and local-area network implementation strategies for five years.

## Hospital consolidates LANs

### ON SITE

BY JOANNE M. WEXLER  
OF STAFF

PITTSBURGH — A major integration effort is under way at Children's Hospital, where the foundation is in place for an organizationwide network aimed at blending an assortment of local-area networks and computers that have sprung up. The hospital has installed the cabling and smart-hub portions of its consolidated network, which became a gleam in manager of information technology Mark Oswald's eye last year when the inefficiencies of running isolated departmental LANs became apparent.

For example, one glaring drawback was "the cost of support because of the variety of expertise needed from LAN administrators," Oswald said. The hospital is currently gluing to-

gether networks from the likes of Apple Computer, Inc., AT&T, Banyan Systems, Inc., Digital Equipment Corp., Microsoft Corp., Novell, Inc. and others.

The goals of the integrated network, he explained, are to eliminate redundancy in patient records across departments, provide broader access to patient data, allow depart-

ments to share resources and distribute software centrally.

For example, "We now do a lot of dictation and central transcription of discharge summaries, operating room reports" and other patient documents, Oswald said. "They are printed out and stored in a hard copy file. If one doctor has a patient's chart and another needs access to it, he's out of luck. Electronic access through the network will eliminate that problem."

Oswald has set some hospital-wide standards to achieve his network goals. For example, new LAN installations will run Network v3.11, which allows users to communicate from a personal computer to a Network server or Transmission Control Protocol/Internet Protocol server without rebooting.

Oswald said the two final considerations for a LAN standard were Network and Microsoft's LAN Manager. He chose Network, he said, because it outperformed LAN Manager in raw throughput. In addition, he said, "Network is stable and has a lot of market presence, which means it's easier to find support staff and network administration expertise."

The hospital's cabling scheme — now in place — is fiber in the backbone and un-

shielded twisted-pair wire to the desktop. LANs are cabled and centrally managed through Chipcom Corp. intelligent wiring centers.

Oswald said the hospital has installed 15 Chipcom hubs because of the product's fault tolerance and triple-LAN architecture. It supports Token Ring and Ethernet today and will support Fiber Distributed Data Interface (FDDI) — a 100M bit/sec. LAN — by the middle of 1992.

Although other hub vendors have recently announced fault tolerance and FDDI modules (ENR, Sept. 9), at the time Oswald was making physical-layer decisions, Chipcom hubs were the only ones with these attributes, he said.

### FDDI down the road

"We anticipate moving to FDDI in about three years, and we wanted the option of migrating to it," he explained. Currently, the hospital's backbone runs Ethernet. Oswald said he expects initial FDDI drivers to be clinical applications, such as imaging-based radiology systems.

Another key element of the network project is shifting the hospital's hierarchical patient database from a DEC VAX to a Sybase Corp. SQL relational database server running either OS/2 or Unix. The software conversion to Sybase is complete.

Oswald said an advantage to the Sybase package is its Open Server software, which allows users to build tools for accessing foreign data structures. The hospital worked with software consultant Dataware, Inc. in Deerfield Beach, Fla., to build the tools, Oswald said.

The database's relational nature is important to the security of confidential patient records, Oswald pointed out.

The database allows the system administrator "to specify which tables, fields within tables and rows within tables each network user has access to."

## Northern adds LAN features to DPN-100

BY CAROL HILDEBRAND  
OF STAFF

Northern Telecom, Inc., best known for its public carrier business, reached out to local-area network dwellers with a passel of enhancements to its DPN-100 group of products.

The additions ranged from a new nine-port low-end product, the DPN 100/1, to links to IBM's Token Ring and asynchronous Systems Network Architecture connectivity.

"They're recognizing the fact that businesses are now looking to the wide area for connectivity of LANs," said Doug Gold, an analyst at International Data Corp. Gold said demands for offerings such as Northern Telecom's are

picking up as people feel the need to push local traffic off the network and onto wide areas.

### High-speed access

The announcement covered several categories. First was the higher speed access offered by enhancements for T1 trunking that augment the access feature already in the product. Incoming transmissions can now be handled at 1.54M bit/sec. with no loss of speed between switches. Approximate pricing is \$70,000 per network as a software fee. Although it can run on existing ports, upgrading to a full T1 frame-relay port will cost \$16,500 per node.

Next are a number of features that allow the product to extend

its reach. The link to Token Ring is "critical if you want to play into the IBM world," Gold said. Token Ring HostPAD allows direct interface to IBM-compatible front-end processors and includes a line card and software for DPN-100-to-LAN links.

The DPN 100/1 allows small businesses to buy into the low end of the product line, Gold said, although it is aimed at larger firms seeking to link regional offices to headquarters.

The third tier is occupied by improved network management capabilities. DPN Expert Advisor is made up of hardware and software that use a knowledge database to automate network troubleshooting to a large extent. Pricing is about \$85,000.

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# X terminals entering business arena

*Tektronix targets companies whose users need access to multiple computers from one device*

BY JOANIE M. WEXLER  
CNET

**NEW YORK** — Asserting that the time is ripe for X display terminals to hit the commercial market, Tektronix, Inc. recently rolled out products and network services aimed at the general business user.

The Wilsonville, Ore.-based vendor has targeted companies looking to give knowledge workers access to multiple computers from one desktop device. Network administration and load analysis services will "help customers assess the true impact" of X overhead on the network, said Stephen J. King, Tektronix's director of marketing.

Multiple-host access is a growing need in corporations as distributed computing proliferates and users seek access to companywide computing resources. However, most X terminals are currently installed in scientific and engineering communities. This is because these environments tend to run graphics-intensive applications on Unix workstations, and the X Window System protocol inherent in X terminals was originally designed to link users to Unix hosts and provide them with a windowing environment.

X Window System software now links

Tektronix has positioned its new low-end XP10 series to address office automation, transaction processing, financial services and decision support applications, where simultaneous on-screen access to these applications is required. The company reasons that its PC-competitive price (\$1,695 to \$2,895) and PC-size footprint will make the X terminal a more viable contender for corporate desktops.

However, whether or not the terminals will triumph as the desktop device of choice is a hotly debated topic. Interna-

tional Data Corp. in Framingham, Mass., predicts a 57% compound annual growth rate in X terminals from 1991 to 1994, while Voorhees, N.J.-based CIMI Corp. sees a mere 8.4% compound annual growth rate for the same period.

Some firms said they were looking to maintain the centralized software control and security that dialless terminals offer. While the base price of PCs is cost-competitive with X terminals, users agreed that by the time they outfit the PC with X accoutrements, that alternative could be-

come more expensive.

One such company is Statistics Canada, the central information-gathering agency for the Canadian government. The firm is poised to replace hundreds of IBM 3270 terminals with an X terminal/controller configuration offered by Harris/Adicom [CW, Aug. 26].

US West Communications, Inc. recently replaced 2,100 3270s with Tektronix X terminals because "the price of the X terminal was 40% cheaper than that of a PC or workstation," and maintenance costs were two-thirds cheaper, explained Walt Armijo, manager of software sales at the Denver firm. "When you make a memory upgrade or software change, you can do that just to the servers" with the terminal solution, he said.

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**M**ULTIPLE-HOST ACCESS is a growing need in corporations as distributed computing proliferates.

terminals, personal computers and workstations to any multiuser operating system-based host running X software on a network. A stand-alone X terminal is intelligent enough to attach directly to a network without a terminal server or cluster controller. The X terminal's distinguishing characteristic is its standard, high-resolution display, which conforms to the X Window System protocol, also known as "X."

Applications designed to run with X can be accessed from computers across an X network simultaneously. Scarcity of X business applications, though, is one impediment to X proliferation in the business world today.

Developers such as Quarterdeck Office Systems, Inc. are addressing the issue. Quarterdeck has traditionally supplied software for the MS-DOS environment and "is looking at how to add graphics to DOS," said Theresa E. Myers, Quarterdeck president. She said the firm will do it with Desqview X, an X-based version of its window manager under development.

Myers said interest in X spans "government, Wall Street, the medical industry and the factory floor. Every major DOS developer is doing an X application."

Rick Kamp, product manager of graphics software at Unix software developer The Santa Cruz Operation, estimated that 150 applications now exist for X and that 80% of those are business applications such as word processing and desktop publishing programs and spreadsheets.

1988 Spent completes the only nationwide 100% digital fiber optic network. Spent awarded 40% of ITS 2000 contract. 1989 World's first and largest privately owned



# Isicad links graphics system with Openview

Initial integration lets Openview send alerts to Command for graphical depiction of net

BY ELISABETH HORWITT  
OF STAFF

Isicad, Inc., has announced integration of its graphics-based configuration management system with Hewlett-Packard Co.'s Openview network management platform.

"We were testing at customer sites the need to integrate physical and logical network management all the way to the application layer," HP Openview market development manager Jeff Thiemann said. The initial integration, available now, al-

lows Openview to send alerts to Command, which can then automatically call up a graphical depiction and text information about the network involved, Isicad product manager John Kaiser said.

Integrating Command with Openview seemed like a useful idea to John Payne, a communications architect at DHL Worldwide Express. "If something terrible happens, you have a map of the building available," DHL has evaluated and is keeping track of Command, but it has held off purchasing the system because of its high cost, Payne said. Command runs on a pro-

prietary workstation with accelerator board — a configuration that can bring the system's price up to a quarter of a million dollars, he added.

Isicad is aware that some customers have been put off by the price of its system, according to vendor spokesman John Kaiser. The product's current proprietary workstation and accelerator board were designed specifically to handle demanding applications that combine graphics and data, he added.

However, Kaiser said, "We are also hearing loudly from the market that peo-

ple want to be on standard platforms."

Isicad and HP plan to demonstrate how Command and Openview can run concurrently on an HP reduced instruction set computing-based, Unix-based workstation at the Internet '91 conference in San Jose, Calif., early next month. Isicad and HP are working to implement HP's Network Management server platform, which runs on HP workstations, Thiemann said. From there, Command will be able to interact with HP's Interconnect Manager, which manages bridges, routers and hubs via the Simple Network Management Protocol, he added.

The next step for the two companies will be a deeper integration of Openview's and Command's respective databases, "so you can define the objects that you are managing in both physical and logical terms," Thiemann said.

## Challenge to Isicad

Meanwhile, an upstart has arisen to challenge Isicad's dominance of the graphics-based network configuration management market. Graphic Management Group, Inc., located in Valhalla, N.Y., recently announced The Graphic Net-Worker, a personal computer-based system that is said to integrate graphical depictions of local- and wide-area network installations with a database of information about such networks.

The Graphic Net-Worker is said to match Command's ability to create maps of network installations and then tie icons within those maps to a database of information about those installations. The links then make it possible for the system to automatically call up information about a network component when the user points to an icon and to update maps and databases concurrently to reflect moves, changes and additions to the network.

The Graphic Net-Worker will also be demonstrated at Interop and is available immediately for \$2,495. It runs on an IBM Personal Computer AT or higher with a minimum of 640K bytes of random-access memory and an IBM Enhanced Graphics Adapter or Video Graphics Array graphics board.

## AT&T waives fees for ISDN

Hoping to pique users' tepid interest in its Integrated Services Digital Network (ISDN) services, AT&T recently announced that it intends to waive the first three months' recurring charge of \$400 per month for new orders for its ISDN Primary Rate Interface offering.

ISDN Primary Rate lines support 23 digital 64K bps/sec. channels. AT&T offers ISDN links as a way to connect up to its networking services on an as-needed basis.

AT&T also said that it will waive the ISDN nonrecurring installation charge of \$3,000 for customers that order Primary Rate-based links to the 384K bps/sec. version of its Software Defined Data Network offering or Switched Digital Service. Customers must order between Sept. 5 and Dec. 31, 1991, and request installation no later than Feb. 15, 1992, to qualify for this offer.

AT&T filed revisions to the relevant Federal Communications Commission tariff late last month.

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transmitted fiber optic cable completed. 1990 Sprint announces the first commercial video services to the Sprint Users. Sprint introduces first nationwide ISDN capabilities.

# UK net managers face crisis

BY RON CONDON  
ST. LOUIS, MISSOURI

LONDON — Network managers in the UK are reaching a crisis point as their systems become increasingly complex, according to a new survey of managers in the country's top 600 companies.

The research, commissioned by 3Com Corp. and carried out by Benchmark Research, concludes that network costs are out of control, that a mixture of solutions has created technical problems for future developments and that increases in demand for network services will put systems under unbearable strain.

- The findings include the following:
- Of the 101 respondents, 93% said their network costs were too high, even though 34% had no idea what their current network costs were.
  - A lack of scalability was a problem for 83%. Their systems had grown up organically and adding to the network created serious technical problems.
  - Numbers of network users are growing fast — 32% said growth had exceeded 50% during the previous year.
  - No real standards had been established — 82% of companies used three or more network protocols.
  - Data volumes are rising sharply, with

29% saying their volumes will rise by 30% or more in the next year.

The use of bridges and routers to tie together different parts of networks was creating concern over whether the networks would be reliable enough to use. 3Com has come up with Scalable Inter-networking, which it said will allow companies to grow their networks. Scalable inter-networking is built around fiber-based local networks linked to wide-area switched networks.

The problem in Europe, however, is that fast frame-relay technology is not being offered yet by the major Postal Telephone and Telegraph authorities, and X.25 cannot provide the required speed.

Condon is a London correspondent for the *IDG News Service*.

# T-Bar switches reroute data to maintain uptime

SHELTON, Conn. — T-Bar, a division of Data Switch Corp., last week announced a new line of fiber-optic switches that reportedly can reroute data automatically when lines on fiber-backed networks go down.

Big banks, brokerage firms and other industries where network downtime can result in lost business opportunities are major targets for Data Switch products. The new switches can protect networks from downtime and security leaks caused by line malfunctions, said Randolph Morin, T-Bar's general manager.

The Multi-mode and Single-mode Fiber Switches use built-in couplers to detect breaks in optical signals in local-area networks that have fiber backbones. The switches, which are scheduled to be available within 90 days, then stop data from going over those lines and reroute the information to a backup line, according to Morin.

The switches support four to 1,000 lines. Prices for the full-featured models, which automatically reroute data when optical signal problems are found, are \$5,000 per module for a Multi-mode version and \$8,000 per network node for a Single-mode model. The basic switches, which shut down data transfer but do not reroute data, cost \$2,500 per module for a Multi-mode and \$6,000 for a Single-mode product.

# NTT stages fairs to educate staff

TOKYO — Nippon Telephone and Telephone Corp. (NTT), one of the world's largest buyers of telecommunications equipment, will hold eight procurement fairs in major Japanese cities over the next three months to introduce foreign products to its own personnel dispersed in offices throughout the country.

The NTT International Procurement Fair '91, the fifth such annual event for NTT purchasing employees, began in Nagoya Sept. 2 and will end in Yamaguchi Nov. 29.

More than 40 companies will exhibit their products to NTT personnel. Until the fairs were held, NTT said, many of its employees had never seen or contemplated purchasing foreign products.

The dominant domestic telecommunications carrier, which was privatized in 1985, does no manufacturing of its own and has maintained close ties with a group of Japanese subcontractors to build products for its telephone systems. NEC Corp., for example, is a major beneficiary of NTT's contract work.

Pressure from the U.S. and other trading partners in recent years to open Japan's telecommunications market to foreign equipment helped set the stage for the fairs. In addition to the exhibits, seminars are planned on some technologies. NTT bought \$485.9 million worth of equipment on the international market last year.

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Specify the new FAX32. For technical details and prices, contact UDS at 800/451-2369 (in Alabama, 205/430-8000); FAX 205/430-8926.

UDS is a registered trademark of Motorola, Inc.



# NACHA attacks telemarketing fraud

Organization establishes hot line for victims of new type of fraud: 'automatic debit scams'

BY MITCH BETTS  
OF STAFF

HERNDON, Va. — The National Automated Clearing House Association (NACHA) has established a program to protect the nation's electronic payments network from a new kind of telemarketing fraud that involves unauthorized withdrawals from checking accounts.

According to federal authorities, the so-called "automatic debit scams" begin when a shady telemarketer persuades consumers to read the account and routing numbers printed in magnetic ink at the bottom of their checks. Using these numbers, the telemarketer prints a "demand draft" to draw money from the consumer's account without proper authorization.

All of the incidents of automatic debit scams reported so far have involved paper drafts, but it is possible to use the checking account numbers to make an electronic debit via the automated clearinghouse

(ACH) network, experts said.

NACHA, based here, has established a hot line and procedures to quickly notify banks of any telemarketer-originated transactions over the ACH network that a consumer considers unauthorized.

Since the hot line opened in July, there have been about 20 calls but no confirmed cases of fraud using the ACH network, according to Linda O'Hara, NACHA's director of rules and operations.

O'Hara said the main reason the fraud has not made any substantial progress on

the ACH network is that "the ACH system has a lot of protections that the [paper] draft system doesn't have." Companies that want to debit customers electronically must be able to send computer files to the bank in the proper format, under a standing ACH agreement.

"If a bank hasn't heard of a company attempting to initiate an ACH file, it simply won't allow the file to enter the network," she explained.

In addition, the bank's computer system can monitor a company's ACH debit

activity as well as establish dollar limits, O'Hara said.

John F. Barker of the National Consumers League, based in Washington, D.C., said there is an unconfirmed rumor that the ACH network has been used for fraudulent debits. He said that would require the perpetrator to have "at least passive cooperation" from a bank on the ACH network.

A troubling aspect of the fraud is that once an illicit telemarketer obtains the consumer's checking account number, "it goes into a database and is sold to other telemarketers" who may use it for more unauthorized debits, according to Carole Byrum, an investigator at the U.S. Bank of Oregon in Portland. The only remedy is to close the account, she added.

## Macintosh users to gain SMDS connection card

BY ELLIS BOOKER  
OF STAFF

SANTA BARBARA, Calif. — When Switched Multimegabit Data Service (SMDS) finally leaves the test phase to become a commercial offering for local telephone company customers, those users will need gear to take advantage of the 1.544M bit/sec.-to-155M bit/sec. local-area network interconnection facility.

Ensuring that users of the Apple Computer, Inc. Macintosh II will be able to play in the SMDS world, Multiaccess Computing Corp. announced last month a single-slot card providing SMDS connections.

The MCC-1000 SMDSTalk Nibus card, which is the company's first product, acts like an Ethernet adapter. It permits direct connection to an SMDS, transparently extending an AppleTalk network over a metropolitan area network.

### Tighter coupling of applications

The card's software, which maps to the AppleTalk link level, permits a tighter coupling of applications — and thus better response times — than a router/bridge interface, according to the vendor.

The single-quantity price for the SMDSTalk card is \$2,999, which Multiaccess states is one-quarter the price of single routers and bridges to connect remote LANs.

A spokeswoman said the vendor believes its SMDS card is the first such product for a Macintosh. She said it was used in a recent Pacific Bell SMDS trial and is currently undergoing Bellcore conformance testing. The card, which will be shown at the Interop '91 show this fall, is now shipping within 60 days of receipt of an order.



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 Network Systems.

NEW PRODUCTS

**Local-area networking hardware**

Xircor, Inc. has introduced the Pocket Ethernet Adapter II for use with portable and desktop computers.

The improved product pro-

vides support for network operating systems from Novell, Inc., IBM, Microsoft Corp. and Banyan Systems, Inc. It weighs 3 ounces.

Pricing ranges from \$495 to \$545, depending on the network media.

Xircor has also announced the External Token Ring Adapt-

er. The adapter (\$945) is software-switchable between 4M and 16M bit/sec. operation.

Xircor  
26025 Murren Road  
Calabasas, Calif. 91302  
(818) 878-7600

**Electronic mail**

Information Presentation Technologies, Inc. has enhanced its

Unix electronic mail software by providing a two-way link to Apple Computer, Inc.'s Macintosh systems.

The product, Umail, allows users of Unix workstations and Macintosh computers linked under the Ushare cross-platform networking system to exchange messages with others in a local-area network and over international mail networks, including

Arpanet and Usenet.

Introductory prices for Umail on Sun Microsystems, Inc. computers range from \$695 to \$850. There is no charge for the Macintosh side.

Information Presentation Technologies

555 Chavira St.  
San Luis Obispo, Calif.  
93401  
(805) 541-3000

Soft-Switch, Inc. has announced Directory Synchronization/CC-Mail, a product linking local-area network electronic mail system directories with other directories in an enterprise network.

The product allows users of Lotus Development Corp.'s CC-Mail to locate other users enterprise-wide. Changes to the directories of individual mail systems are automatically distributed to all synchronized directories on the network.

Support for other E-mail packages is planned, the company reports.

Pricing starts at \$4,000 depending on the number of CC-Mail Post Offices.

Soft-Switch  
640 Lee Road  
Wayne, Pa. 19087  
(215) 640-9600

**Diagnostic equipment**

Microtest, Inc. has announced the Next Scanner, a handheld cable tester.

The Next Scanner automatically determines the appropriate tests to run when the user inputs the cable and network type and also indicates whether the cabling can support a given application, according to the company.

For example, it certifies whether existing wiring will support 10Base-T applications. It contains flash read-only memory cards and can be software-updated via modem.

The scanner costs \$3,495.

Microtest  
Suite 134  
3519 E. Shea Blvd.  
Phoenix, Ariz. 85028  
(602) 971-6464



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Next Scanner determines cable and network input tests

More new products on page 30

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Some merely run. Others go beyond.



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## Network management

Automatic configuration and discovery features have been added to the network management package Vainet 2.0 from Technology Dynamics, Inc.

The system lists new workstations that have been installed to the network since the last

time the topology was mapped. Vainet 2.0 also supports Windows's Dynamic Data Exchange. Vainet currently runs on Microsoft Corp.'s LAN Manager, Netbios and IBM's LAN Server.

Vainet 2.0 costs \$1,995.

Technology Dynamics  
Suite S-006  
430 10th St. N.W.  
Atlanta, Ga. 30318  
(404) 874-0428

Neon Software, Inc. has begun shipping Routercheck.

Routercheck is a network management software product enabling administrators to monitor Appletalk gateways, bridges and routers from a single Apple Computer, Inc. Macintosh computer. Router profiling, reporting and configuration checking capabilities are included.

The product costs \$649.

Neon Software  
Suite 203  
1009 Oak Hill Road  
Lafayette, Calif. 94549  
(415) 283-9771

## Systems Network Architecture

Gateway Communications, Inc. has added two gateways to its G/SNA gateway family of net-

work-to-Systems Network Architecture mainframe links.

The 3770 and 3270 gateways provide local-area network users with transparent, remote connectivity to IBM SNA-attached mainframes or personal computers over a single communications line.

The 3770 gateway supports eight concurrent users. The 3270 gateway provides up to 128 LAN users with interactive IBM 3270 communications in any IBM VTAM/TCAM environment.

The gateways cost \$2,495 each.

Gateway Communications  
2941 Alton Ave.  
Irvine, Calif. 92714  
(714) 553-1555

## Gateways, bridges, routers

RAD Data Communications Ltd. has created the MBE, a device for connecting remote workstation clusters to an Ethernet network.

The MBE provides data transmission at up to 250M bps/sec. over private or public lines. One MBE at the local-area network site communicates with another at the remote location. The remote cluster can contain up to eight systems.

A single-port MBE costs from \$800 to \$1,100, depending on the interface.

RAD Data Communications  
151 W. Passaic St.  
Rochelle Park, N.J. 07662  
(201) 587-8822

Fibermax Corp. has introduced an Ethernet bridge for use with the company's Crossbow workstation networking hub.

Smartbridge filters 26,000 packets/sec. and forwards 13,000 packets/sec. It is a module that attaches directly to the company's Crossbow management system and offers increased control over network traffic, according to the firm.

Smartbridge costs \$3,250.

Fibermax  
9310 Topanga Canyon Blvd.  
Chatsworth, Calif. 91311  
(818) 709-6000

## Micro-to-host

A 3270 emulation feature is now available for Wall Data, Inc.'s Rumba for software.

Rumba provides connectivity between personal computers running Microsoft Corp.'s Windows 3.0 and IBM Application Systems/400 midrange computers. The emulator enables Rumba users to also access data on mainframes.

The emulator software costs \$200.  
Wall Data  
17769 Northeast 78th Place  
Redmond, Wash. 98052  
(206) 883-4777

# TEST PATTERN.



## When Multi-Tech modems are put to the test, a pattern emerges.

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\*PC Magazine: 12/11/90 (Derek Fisherburg) "9600-BPS MODEMS: Break into the Speed Barrier PC LAN Labs tests rapid file transfers comparing with V.32, V.42 and V.42bis standards."

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# Bethlehem Steel forges its DB2 administration with BMC Software.

Bethlehem Steel Corporation, a leading U.S. steel producer, strives to improve productivity in its DB2 environment. When Bethlehem Steel joined the DB2 market, it immediately began looking for DB2 administration products.

For nine years, Bethlehem Steel has relied on BMC Software's DB2 products to manage their IMS database and data communications network. BMC Software is the best source for the DB2 tools they seek because of the evaluation process designed to stress DB2 products. Few of the products could handle the trial.

While other vendors made promises for future capability, BMC Software delivered comprehensive DB2 MASTERMIND for DB2. With BMC advanced features were available.

Program manager Harry Friedel explained, "The speed with which ALTER for DB2 was able to make multiple changes at one time and generate the worklist in the sequence of the proper creation objects was far advanced compared to the other products we looked at."

The time savings led technical analyst Mike Best to say, "The return-on-investment has been tremendous."

The other MASTERMIND products also provide comprehensive capabilities for Bethlehem Steel.

DB2 CC-MANAGER for DB2 provides the many basic functions for managing the DB2 catalog. This one product simplifies catalog management, generates object lists, takes action on administrator requests and creates utility jobs.

DB2 PERFORMANCE MANAGER for DB2 promotes planning and operation. It provides comprehensive statistics, historical data for trend analysis, and the ability for setting up and acting upon user-defined thresholds.

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# MANAGER'S JOURNAL

## EXECUTIVE TRACK



Dorothy Yetter has been appointed chief information officer and director of technology for the county of San Mateo in California.

Yetter was formerly manager of the county's Criminal Justice Information System, a project integrating information from all criminal justice agencies, including city police departments, the county probation departments and the courts.

Yetter will be responsible for developing a strategic information services plan and involving user departments in developing new programs.

Before joining San Mateo County, Yetter served as acting manager for the financial management systems of the Chicago Mercantile Exchange.



Patrick W. McDonald was named director of management information services at Krell Industries, Inc., a Minneapolis, Minn.-based distributor of pharmaceuticals, general merchandise and computerized management systems.

McDonald has full responsibility for the company's MIS functions and reports to Dennis J. Allingham, chief financial officer.

Jacques Silver was named vice president of MIS at Adia Personnel Services, Inc., a temporary and permanent personnel placement firm in Menlo Park, Calif.

Silver had been a general manager at BankAmerica Corp.'s systems engineering unit in Concord, Calif., for the past four years. Before that, she was senior vice president in charge of item processing for asset and liability products at Wells Fargo Bank NA in San Francisco.

She holds a master's degree in linguistics from the University of California at Berkeley and is a doctoral candidate in linguistics there. She holds a bachelor's degree in engineering and mathematics from Rockford College in Rockford, Ill.

## Getting acquainted, high-tech style

Databases of consumer buying habits are gaining momentum with food marketers

BY ELISABETH HORWITT  
OF MARY

Dear Mrs. Jones,

*As a consumer of our Mean Cuisine line of low-fat frozen foods, you understand the value of eating variety to stay healthy. But did you know that we recently introduced a line of low-fat, tasty cookies? Enclosed is a \$1 coupon toward the purchase of a box of our new Healthbits morsels, along with a free booklet on the cholesterol content of other leading brands.*

Sincerely,

Healthful Foods & Co.

Letters such as the imaginary one above are on the verge of becoming common mailbox fodder as food manufacturers find new ways to collect data about the preferences, tastes and buying habits of individual consumers and households.

"Technology can now recreate the database that was in the head of the old friendly grocer [who] used to know you, your shopping habits and your family," says Lynn Wunderman, a senior vice president and director of strategic planning and information management at Ogilvy & Mather Direct, a New York direct marketing agency. "It's not quite like a one-on-one, but it gives the manufacturer or retailer the opportunity to say, 'You're important — I value your opinion. I picked this out special for you, Mrs. Jones.'"

With households becoming "fragmented and harder to reach by mass media," packaged goods companies are increasingly targeting their promotions to specific consumer segments, says Tom Dailey, president of Spectra Marketing Systems, Inc. One way to slice consumers is by life-style;

upscale vs. downscale or suburban vs. urban vs. rural.

Such slicing and dicing of consumer groups gives more bang to promotional bucks, which make up about 30% of packaged food manufacturers' marketing dollars, says Jonathan Capinsky, a vice president at management consultancy Booz Allen & Hamilton, Inc.

While the typical response rate for promotional inserts in newspapers is 2% to 3%, "more targeted promotions can triple re-

sponse rates, at a minimum," Capinsky says. "In some cases, I've had clients get things up as high as 25% to 30%."

Database targeting is also fostering brand affiliation, an emerging strategy among the more diversified food companies. The idea is to group various brands around a common theme, such as low-fat or good-for-kids foods, and then hit the appropriate consumer groups with a value-added promotion.

"If I am a cholesterol-conscious consumer received a free newsletter from Procter & Gamble which had health tips, recipes and low-cholesterol products that they were introducing, I might wind up looking at products I never did before," Capinsky says.

Perhaps most importantly, food

firms and retailers can use personalized mailings to build long-term relationships with consumers, Wunderman says.

The foundation of all the above strategies is a good marketing consumer database. The first step to achieving that is to get consumers to provide their names and addresses, according to Rick Vettesse, a manager at Kraft General Foods, Inc.'s promotional service center in Kan-

lakee, Ill.



Michael S. Fine

"Once you have that data, you can overlay it with whatever else you can find out about that consumer or market segment," Vettesse says. A variety of services provide that data.

Food companies are getting creative about eliciting that crucial first contact with the consumer. A long-used gambit is for a company to offer rebates to consumers who send in proofs of purchase — along with their names and addresses, according to Vettesse.

A number of companies have created toll-free telephone number services that field customer complaints and queries, send free recipes and coupons — and extract the customer's name.

Continued on page 98

## Specnet: Retailers find strength in numbers

BY CLINTON WILDER  
OF MARY

If you want something done right, do it with 35 others.

That is the thinking behind Specnet, a consortium of 36 specialty retailers across the U.S. The firms reasoned that they could share telecommunications capabilities to help compete with the big boys such as Sears, Roebuck and Co. and Wal-Mart Stores, Inc. They want to pursue point-of-sale data capture and instant credit authorization, but they can't afford the networking costs on their own.

"We'd like to be able to do the kinds of things that big regional department stores have been able to do with their dedicated or leased lines," said Richard

Paul, vice president of information services at the National Retail Federation (NRF) in New York.

Specnet's first action will be joint purchasing of a voice services megadeal contract for all consortium members. AT&T and MCI Communications Corp. are among the bidders for the multiyear pact, which members expect to provide huge volume discounts.

In the first half of 1992, the consortium will issue requests for proposals for data communications services such as check and credit authorization, message switching and electronic mail.

"We expect the savings from the

voice contract to fund the data contract," said Mick Connors, senior vice president of management information services at The Gap Stores, Inc. in San Bruno, Calif.

"We all share a certain requirement: the need for a cheap pipeline," said Fred Morheimer, director of MIS at Trader Joe's, Inc., a specialty foods chain based in South Pasadena, Calif. "It's simply a case of getting together and using our clout to solve a common problem."

Morheimer said he has high hopes for Specnet. "In a few years, every specialty retailer with more than two stores will want to be a member."

# Toll-free number is direct line to IS job candidates

BY DAVID A. KELLY  
SPECIAL TOC

When Sears Technology Services, Inc. placed an ad to find experienced CICS, OS/2, DB2 and Info Management programmers, applicants didn't send in their resumes—they called toll-free.

To find three qualified programmers, Sears Technology Services, the technology arm of Sears, Roebuck and Co., used a service that placed help-wanted ads with 800 numbers for applicants to respond to. Telephone lines were staffed around the clock, every day. Candidates were asked

approximately 20 questions relating to the skills necessary for the position. Each day, a list of qualified applicants was compiled and sent to the Sears Technology hiring manager for quick review and selection.

"From hundreds of initial calls, we received 23 qualified profiles, and the majority of responses came in only three days after the ad was run," said Michael J. Puckett, senior human resources representative at Chicago-based Sears Technology. "We also ran a con-

ventional help-wanted ad, but found that we made all of our three hires off the 800-number ad."

Puckett said because Sears Technology is strictly an IBM shop, he needed to find programmers highly qualified for IBM environments. "800-number ads capture an audience right away, since there are a lot of people that just browse and do not have a resume ready," he said.

A number of companies, including Houston-based Recruitment Enhance-

ment Services, Inc. and Chicago-based Adtrak, a division of Searson Corp., offer such services.

In addition to finding someone fast, the service can quickly identify the applicants best suited for a job. For example, by tailoring the questions asked during the initial telephone call, Aramco Services Co. in Houston was able to quickly find a telecommunications engineer for systems design. "We found that it was a real work saver on finding qualified people," said Joe Coleman, manager of employment at Aramco Services.

Other companies that have used toll-free recruiting include Lockheed Technical Operations Co., Arco Chemical Co. and Honeywell, Inc. Other benefits include the following:

- A broader base of applicants is reached because only a telephone call is required—candidates do not need to update and mail a resume. This "lower cost of entry" attracts qualified individuals who are not actively looking for new jobs or who do not have resumes prepared.
- The service provides 24-hour response.

**T**OLL-FREE NUMBERS "are not the complete answer to all recruiting needs, but they can help interest a person who you have not accessed before."

JOE COLEMAN  
ARAMCO SERVICES

seven days a week, so applicants can answer the ad immediately after reading it (in the Sunday paper, for example) or at their convenience.

• Data sheets on applicants make it easy for managers to quickly identify overqualified or underqualified people.

• Responses arrive in days instead of weeks, shortening the search process.

• Prompt responses enable companies to save money by advertising for only one day instead of for two or three days.

• A custom database can be created for future recruitment searches. The same applicant pool can be searched quickly if new positions open up in the future.

"We used this process for recruiting periods when Aramco had a large number of jobs to fill and not enough staff to handle all the resumes coming in," Coleman said. "It's like an extra body out there that you can use without increasing your recruiting staff."

Rating the telephone interviews on a prepared set of questions makes comparing the qualifications of job candidates easier than comparing piles of differing resumes. "Because we received profiles from one source, it was like comparing apples to apples," said Kathleen Schatz, manager of organizational development for GAF Building Materials Corp.

Toll-free numbers "are not the complete answer to all recruiting needs, but they can help interest a person who you have not accessed before," Coleman said.

Kelly is a free-lance writer based in Wilkerson, Mass.



## COMMENTARY

Michael Shattow

## Work management works best



For IS organizations that must improve the management and efficiency of their operations, project management software is not the answer. While project management packages have their virtues, creating a critical path schedule and resource utilization plan for a project does not solve the primary problems facing senior information systems management.

Project management automation makes up just one room in the house that IS must build to run the organization like a business. Too many IS shops use project management software in a room by itself, unconnected to time reporting, accounting and chargeback, budgeting, estimating and maintenance backlog management systems.

"Work management" is perhaps a better nomenclature and a more pertinent subject for today's IS managers. Unlike project management packages, a work management system provides an IS-wide framework for managing IS as a true business organization through a comprehensive set of integrated control applications.

Many IS organizations today are saddled with a hodgepodge of manual and automated accounting systems, PC-based project management packages, budgeting systems, backlog management systems and software development methodologies. Integrating information for management analysis and exception reporting is a difficult and sometimes impossible chore. By the time managers have the information on their desks, it is often a month old.

Two characteristics of a work management system can help save IS operations from this "hodgepodge syndrome" described earlier. First, a single methodology can reinforce planning, control, reporting and development process standards throughout the IS organization.

The Application Programming Division at Motorola Insurance, for example, recently integrated its life-cycle methodology in its time accounting and project tracking system. As a result, Motorists has gained consistency in management reporting to facilitate apples-to-apples comparisons of project, cost and resource information.

Second, a true work management system possesses a multiproject architecture that stores all projects and resources and relates them to the organizational structure. How much money is the IS organization spending on maintenance across all projects? Which projects are more than 10% over budget or behind schedule?

For the large IS organization to answer these questions, the multiproject database must be robust enough to manage and integrate data from hundreds, even thousands, of projects. For example, at Northwest Technical Services, the IS arm of Northwest Bank in Minneapolis, all project and resource information is stored

within a single central repository or database. The linking of project characteristics to an organizationwide model enables multiproject resource and project planning, budgeting and tracking at virtually any level of management responsibility.

Relatively few IS organizations today are currently able to answer fundamental management questions if the answers require flexible aggregation of data captured from multiple development and maintenance projects. Unlike traditional project management agencies such as aerospace and construction industries that generally track a single large project, IS organizations are challenged to plan, track and manage hundreds of projects of greatly varying size and duration.

In addition, most project management systems on the market fail to help manage the majority of the work done in IS today: maintenance of existing systems. In order to be effective, a work management system must streamline maintenance and service request management, enabling users to quickly initiate, approve and track work requests and assign resources to these maintenance activities.

At superregional bank CNCB, a work management system has allowed IS to disperse application maintenance and development yet still provide a consistent mechanism for IS-wide management reporting. The system is used to "roll up" project information across one or more business units for reporting at various

managerial levels.

The difference between project management and work management is one of scope and capability. Project management aids the project manager alone. Work management provides every level of management with timely strategic and tactical information to improve accountability, productivity and communication—both within IS and with external project sponsors.

Senior IS management can then focus its increasingly limited resources on key business priorities and quickly adapt to changing conditions.

Shattow is president of Multitask Software Development Corp., a Boston-based firm providing management consulting services and control tools.

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## CALENDAR

The Computer Security Seminar Series, a four-hour course on how to plan and implement computer and network security programs, will be held Oct. 8-Nov. 16 in 12 U.S. cities. It is co-sponsored by the Association for Computing Machinery, Adapeo, American Express Co., Ernst & Young and *Computerworld*.

The schedule for the series is as follows: Phoenix, Oct. 8; Atlanta, Oct. 21; Los Angeles, Oct. 22; Detroit, Oct. 25; Chicago, Oct. 29; Minneapolis, Oct. 30; Houston, Nov. 4; Philadelphia, Nov. 6; Boston, Nov. 7; New York, Nov. 8; San Francisco, Nov. 15; and Washington, D.C., Nov. 18.

For more information or to register, contact The Computer Security Seminar Series, Frederick, MD. (301) 662-8087.

## SEPT. 29-OCT. 5

**Research '91 International User Conference.** Lincoln, N.Y. Sept. 29-Oct. 1—Contact: Thomas Midway Software Engineering of America, Inc., Lake Success, N.Y. (516) 253-7000.

**Electronic Imaging International.** Boston, Sept. 29-Oct. 1—Contact: Miller Printers Exposition, Boston, Mass. (617) 553-3075.

**Retail Information Systems Conference.** Chicago, Sept. 29-Oct. 2—Contact: The National Retail Federation, New York, N.Y. (212) 563-5113.

**AFIRM International Conference and Exhibition.** San Francisco, Sept. 29-Oct. 2—Contact: AFIRM International, Fort Myers, Fla. (813) 273-7187.

**Global Roundtable.** New Haven, Conn., Sept. 29-Oct. 3—Contact: Lee Jann, On-Line Software, Inc., Princeton, N.J. (609) 798-6200.

**16th International Oracle User Meeting (OUM).** Miami Beach, Sept. 29-Oct. 4—Contact: ORCL, Redwood Shores, Calif. (415) 566-7000.

**Plot '91.** Burlington, Mass., Sept. 30-Oct. 1—Contact: Lee Nash, Maynard New England Plot Users Association, Eatonsville, Mass. (508) 436-2706.

**Computer User Franchising on the West Coast.** Toronto, Sept. 30-Oct. 1—Contact: Computer Law Associates, Fairfax, Va. (703) 597-7028.

**11th Annual Conference on Control, Audit and Security of Information Systems.** Atlanta, Sept. 30-Oct. 1—Contact: MIT Training Institute, Framingham, Mass. (508) 875-7995.

**Object-Oriented Analysis and Design.** Washington, D.C., Sept. 30-Oct. 2—Contact: Barnett Data Systems, Redville, MD. (410) 742-1288.

**Open Shop: The Self-Learning Operations Conference.** Cambridge, Mass., Sept. 30-Oct. 4—Contact: Self-Learning, Norcross, Mass. (617) 994-2944.

**Executive Edge '91.** Chicago, Oct. 1-3—Contact: Executive Management Associates, Inc., Wheeling, Conn. (203) 274-1411.

**Self-Paid Computer Publishing Conference and Exposition.** San Jose, Calif., Oct. 1-4—Contact: Sealed Systems, Milpitas, Calif. (415) 937-0506.

**North American IBM Users Forum.** Springfield, Mass., Oct. 1-4—Contact: Don Hallinan, National Institute of Standards and Technology (NIST), Gaithersburg, MD. (301) 975-2857.

**National Computer Security Conference.** Washington, D.C., Oct. 1-4—Contact: Thomas Gore, NIST, Gaithersburg, MD. (301) 975-5775.

**Soundstructure Information Association (SIA) Annual Conference.** Santa Clara, Calif., Oct. 2—Contact: Lohan Jackson, SIA, San Jose, Calif. (408) 246-2771.

**Lap & Publisher '91.** Chicago, Oct. 3-4—Contact: Lap & Publisher, New York, N.Y. (212) 682-7906.

**Castle Aisle '91.** Hong Kong, Oct. 6-7—Contact: Hammer Farm USA, Inc., Princeton, N.J. (609) 967-1302.

**CAD/CAM, CAD Reader/Systems Integrator Strategy Workshops.** Bedford, Mass., Oct. 5-6—Contact: Tech Group, Inc., Danvers, N.J., Cambridge, Mass. (617) 254-2335.

## OCT. 6-12

**New Developer Conference.** Toledo, Ohio, Oct. 6-9—Contact: Ray Sullivan, Perryburgh, Ohio (419) 876-0162.

**Society for Information Management (SIM) Annual Conference.** Chicago, Oct. 6-10—Contact: SIM, Chicago, Ill. (312) 444-6110.

**Object-Oriented Programming Systems, Languages and Applications Conference.** Phoenix, Oct. 6-11—Contact: Carle Mass, Gentryville Corp., Marked, Phil. (617) 638-3682.

**International Conference on Desktop Manufacturing.** Cambridge, Mass., Oct. 7-8—Contact: Management Roundtable, Boston, Mass. (617) 333-4000.

**East Coast Users Group (ECUG).** Baltimore, Oct. 7-8—Contact: Century Circle, MD, Columbia, Md. (410) 290-5500.

**Interapp '91.** San Jose, Calif., Oct. 7-11—Contact: Interapp, Inc., San Jose, Calif. (408) 943-3390.

**Third Annual Strictly Business Computer Expo.** Houston, Oct. 9-12—Contact: Champion Production, South Burnsville, Minn. (612) 894-8007.

**Joint Applications Development Symposium.** St. Louis, Oct. 10-11—Contact: Lakes Area Association for Systems Management, Rosemead, Ill. (708) 465-1961.

## OCT. 13-19

**Microstructure Symposium.** Denver, Oct. 13-15—Contact: Wayne Lerner, Lerner Symposium, Verley, Pa. (717) 743-2982.

**Creating the Business-Responsive IT Organization.** London, Oct. 14-18—Contact: United Communications Group, Redville, Md. (301) 616-8950.

**Technosave '91/Power '91.** Boston, Oct. 14-17—Contact: U.S. Society of Way Users, Chicago, Ill. (708) 852-3888.

**Operations and Systems Management Forum.** Geneva, Texas, Oct. 15-18—Contact: Magna Systems, New Science Association, Inc., Southport, Conn. (203) 256-1661.

**AS-IBM Expo.** Washington, D.C., Oct. 15-17—Contact: World Expo Corp., Framingham, Mass. (508) 890-8123.

**Communications Managers Association (CMA).** Yonkers, N.Y., New York, Oct. 15-17—Contact: CMA, Roseland, N.J. (201) 768-3824.

**Harvard '91.** Dallas, Oct. 15-17—Contact: Mark A. Harward, Evans Publishing, Inc., Englewood Cliffs, N.J. (201) 349-8543.

**11th Annual Eastern American MGR Users Conference.** Atlantic City, Oct. 16-18—Contact: Frank White, Times One Trading Machine, Willow Grove, Pa. (215) 675-7194.

**Coaching Building 18 Participants.** Cambridge, Mass., Oct. 16-18—Contact: Mike Steffing, CSC Inkjet Systems, Cambridge, Mass. (617) 499-1874.

**Hardware Systems Conference.** Portland, Oct. 18-19—Contact: Lisa Lane, Associates for Systems Management, Portland, Conn. (203) 669-4444.

**Software '91.** San Diego, Oct. 18-19—Contact: Andrea Papp, Edman Publishing, D.C. (202) 873-4000.

**WFO/ISO Graphics.** Houston, Oct. 19-25—Contact: Westwood Computer Graphics Association, Fairfax, Va. (703) 466-0000.

**Seaview.** Dallas, Oct. 19-20—Contact: Magna Systems, New Science Association, Inc., Southport, Conn. (203) 256-1661.

**International Society for Hybrid Microelectronics (ISHM) Symposium.** San Francisco, Oct. 19-21—Contact: ISHM Symposium Department, Boston, U.S. (717) 471-0000.

## Preference

CONTINUED FROM PAGE 93

address and other pertinent information in the process.

"Ultimately, we can begin to capture information regarding the consumers calling in and their preferences," says Tom Modestoni, director of information systems at Ocean Spray Cranberries, Inc. in Plymouth, Mass.

A promising data collection technology to emerge recently is the smart or bar-coded card that automatically enters the

consumer's purchase and name at a supermarket checkout line. In return, the consumer receives automatic discounts on certain brands, points toward future rebates or free gifts.

Smart card technology is still very much in the pilot stage, as manufacturers and retailers struggle with such issues as who owns the data, who pays for the checkout machines and how to overcome consumers' fears of Big Brother monitoring their buying habits (see story at right).

"We are at the doorstep of the smart card/frequent buyer program information potential," Hiteau says.

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## Check out these cards

The smart card or bar-coded supermarket checkout card could well supersede the checkout scanner as retailers' and packaged goods firms' favorite way to collect precise data on consumer purchases. However, various logistical issues have kept electronic card-based "preferred shopper" programs in their infancy.

A case in point is Citicorp's Point of Sale Service. Introduced in several U.S. regions about two years ago, the program offers in-depth consumer analysis of data collected by consumer checkout cards.

"If you want to introduce a mailing in a region Citicorp is in, you can ask them to isolate a database group of people you did not mail to" to evaluate the mailing's effectiveness, explains Rick Yatzewski, a direct marketing services manager at Kraft General Foods' promotional service center in Randolph, Ill. "Otherwise, you can easily make the assumption, 'Gee whiz, people bought more Koolaid in June—' that promotion really worked,' when June happens to be a high time for buying Koolaid."

Last December, Citicorp decided to shelve an early version of the program, called Reward America. One main problem was that the consumer reward program was too cumbersome, according to company spokeswoman Susan Weiss. "They had to identify themselves each time to earn credit," she says. In addition, the program was exclusive to one supermarket chain in a given area, which severely limited the range of purchase data.

Citicorp is now concentrating on building a critical mass of data in a few key cities and has tied the cards to electronic payment systems at stores, Weiss says. There are no plans to expand the program.

Procter & Gamble Co., Kraft General Foods, Ralston Purina Co. and Ocean Spray are among the food firms participating with supermarket chains in pilot "preferred customer" programs.

Most of these pilots concentrate on fostering sales and customer loyalty through the rebates and make little or no use of the mountains of consumer purchase information that the cards are entering. The main reason: fear of fostering a "Big Brother is watching" scenario with consumers.

Schuck Martetz, Inc. tells participants in its "Extra Shopping Power" program that information about their purchases is kept confidential, according to Susan Gibson, a spokeswoman for the St. Louis-based supermarket chain. "Manufacturers only get information about how their products are doing vs. someone else's during a given week," she says.

ELIZABETH BERTWITT



## CLIPS



This Logo

Summaries from leading scientific and management journals

### "Computer-mediated communications: A comparison of voice and electronic mail"

By Peter A. Todd, R. Ryan Nelson and Dennis A. Adams

McIntire School of Commerce  
University of Virginia  
July 1991

■ Survey results rate electronic mail the victor over voice mail for usefulness in communication within companies. Both technologies provide message transmission, retrieval and storage, but 68 survey respondents in 12 companies using both said that E-mail reduces the need for memos, telephone calls and face-to-face meetings to a greater extent than the voice alternative.

Survey-takers tended to view voice mail as a more reactive form of communication serving merely as an answering service that generally takes a backseat to telephone conversations. While voice mail was said to improve internal efficiency, users said E-mail is more likely to enhance decision-making. Voice mail emerged as the preferred communication method, however, for on-the-road sales forces and other employees wishing to keep in touch with the home office.

The advantages of both are increased managerial independence from support staff and increased time-some and after-hours independence. The disadvantages are that messages are frequently too long and time-consuming and that they can be used inappropriately in place of meetings. — Joanie M. Wester

### "The real costs and benefits of CASE"

By Richard T. Due

The Journal of Information  
Systems Management  
Summer 1991

■ Software maintenance is a millstone for information systems departments big and small. Why not abolish it?

Some estimates put the share of a typical systems budget consumed by on software maintenance at 80% to 90%. Compounding this are the demand for new software systems and shortages of trained programmers. But is computer-aided software engineering (CASE) the answer? Some CASE vendors claimed massive productivity gains, but many organizations have found CASE to be a marginal, expensive investment.

What is needed is a new development and maintenance paradigm used in conjunction with CASE.

In one proposed model, "no-touch" code is generated by CASE tools from validated models. Such code is never "maintained" because doing so would invalidate the organization's plans and applications models.

Business models and associated applications are held in a common repository and code is not changed until those models change. The repository is surrounded by planning, modeling, construction and validation components, all supported by different CASE tools.

The tangible benefits of such an approach are that new code is developed faster and less expensively and systems personnel are freed from traditional software maintenance. — Ellis Boobar

### "Personal privacy exposed in corporate databases"

By Michael H. Agrenoff

Information Strategy:  
The Executive's Journal  
Summer 1991

■ The notion of individual privacy is hundreds of years old, yet there is still no legal scheme in the U.S. to protect personal information stored in government and private computer systems.

It is easier than ever to collect, store and distribute personal information. Federal law limits corporate and government accumulation of personal data, and now private companies must do the

same or run the risk of being sued by employees and customers. Companies are advised to develop internal privacy codes for their own protection.

The privacy basic codes should include the following:

- Data collection principles that limit the nature and amount of data collected.
- Data accuracy principles that mandate data gathered on individuals be verified before it is entered into a company's database.
- Data confidentiality principles that govern computer security procedures, limit access to personal information by third parties and require the keeping of records that detail the circumstances under which information is disclosed.

— Michael Alexander

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# Business units seizing control of IS

BY ELLIS BOOKER  
COWLEY

ST. LOUIS — What a difference a decade makes.

Ten years ago, attendees at Washington University's International Conference on Enterprisewide Information Management struggled with theory issues of a largely technical nature: "How can technology better serve the requirements of our users?" and "What technologies will be important as we move from batch processing to on-line systems and intelligent workstations?"

At the 10th annual conference earlier this month, however, technology decidedly took a backseat to issues revolving around how information systems planning can and must be coordinated with business planning. The idea of using technology to restructure the business and specific business processes attracted the

most interest from the approximately 200 conference attendees.

"Originally, we thought this conference was about data and systems, so our emphasis was on models," said Robert Benson, dean at the School of Technology and Information Management and director of the Center for the Study of Data Processing at Washington University.

Next came the idea of "linkage" between the IS plan and the business plan. "But that begged the question of what was the business plan," Benson said. In general, he added, the conference has evolved from a theoretical analysis of IS

models to presentations "from real managers in real companies."

Running in tandem with that development has been the conference's shift from focusing obsessively on top-level IS executives to a distributed chief information officer. "The unit of analysis is less the enterprise than the individual lines of business," Benson said.

Meanwhile, the users at those business units have grown considerably more sophisticated on the subject of information technology: Unlike a decade ago, today they often know what systems they want. They may also have opinions on

how best to get these systems.

"For the past five to 10 years, the people percolating up the decision-making ranks are taking technology for granted," said Don Winski, CIO at Time-Warner, Inc. in New York. "Are we [watching] the fast disappearing role of IS?"

Bruce Rogow, executive vice president at Gartner Group, Inc. in Stamford, Conn., replied that IS professionals can "bring [to business problems] our systematic thinking, our rigor in defining problems and building models."

Rogow, enjoying the role of a provocateur, also pointed to the "leadership gap," in which IS departments typically respond to user requests but fail to suggest ways to take the business forward. The idea supported by Rogow that IS ought to be a

In the 70's, everyone wanted an easy-to-use relational database. They settled on Oracle. But it was slow. In the 80's, everyone wanted speed. Sybase promised speed. But only for short updates.

Now the 90's demand both — and a lot more. An RDBMS where high performance measurements go beyond the repetitive, short write benchmarks of OLTP. An RDBMS that is truly easy to use, and designed to meet today's increasing challenges. In the 90's, businesses need OLCP (On-Line Complex Processing) — a database concept that allows you to build more complex applications, perform more complex analyses, and use more complex data in heterogeneous environments.

Which brings us to the small print.

## Where were you in 1981?

Some attendees at the 10th International Conference on Enterprisewide Information Management used the occasion to look back at changes in the IS profession since 1981. One such person was Henry O. Wintermute, director of IS planning at 3M Co. in St. Paul, Minn.

"Ten years ago, we were preoccupied with delivering services," he said. "We still have that infrastructure to run... but now we have layered the issue of justifying systems." That justification, Wintermute added, has grown more complex. "Instead of saying, 'This system will replace 18 clerks,' you now say 'This system can grow the business without adding head count,'" he said.

Meanwhile, the performance metrics have shifted from measures that were internal to IS to the same ones used by the business planners, Wintermute said.

One troubling question at the Washington University conference was, "How can IS and the business sides of the organization hope to coordinate efforts if they use a different lexicon?"

At 3M, for example, this problem was recognized years ago, and now "the format for the strategic planning and systems planning groups are the same," Wintermute explained.

Wintermute also advised colleagues against becoming too narrowly focused by attending IS strategy conferences exclusively.

"You certainly shouldn't spend your life going to these things," he said, adding that for 10 years, he has made a point of also trying to attend human resources, accounting and manufacturing conferences.

ELLIS BOOKER

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"peer" or a "co-equal" with the business side of the organization, helping to steer it to new financial and marketplace heights, has become a politically correct concept in recent years.

But at least some executives maintained that "service organization" is not a derogatory appellation. At Kimberly-Clark Corp. in Dallas, IS goals are not set by some high-level steering committee. John Kohler, senior vice president of corporate administrative services, calls that approach "archaic and counterproductive," producing voluminous and detailed IS plans "that nobody reads."

Kohler manages a 700-person worldwide IS staff at Kimberly-Clark, a highly diversified corporation. Best known for its Kleenex and Huggies brand products,

Kimberly-Clark ranked 78 in the Fortune 500 and had \$6.4 billion in revenue in 1990.

"The priority setting takes place inside the functional units," Kohler said.

Even more important is Kimberly-Clark's fiscal approach, which puts responsibility for cost-justification as well as the identification of systems needs on the business units. The result is that IS growth is controlled by the business units, which are accountable for all IS charges, down to hourly rates for the in-house consulting services.

To prevent different IS projects from working at cross purposes, the IS department does have key responsibility for infrastructure, in the form of standards and computer networks, Kohler noted.

## GAO report lauds FBI system, pans Library of Congress IS

BY GARY H. ANTHES  
CW STAFF

WASHINGTON, D.C. — There were information systems management laurels for the Federal Bureau of Investigation but darts for the Library of Congress in a recent report from the U.S. General Accounting Office (GAO).

In a report that was rure for its praise of a federal computer project, congressional auditors said the FBI's effort to over-

haul the 20-year-old system that tracks wanted and missing persons and stolen property is a model of good management.

But the Library of Congress did not fare so well. The GAO said the library's accounting and financial systems are in such poor condition that significant account balances could not be audited. The report said it could not substantiate the number of items in the library's collection or the items' value, roughly estimated at \$6.8 billion.

The FBI has finished defining requirements for its National Crime Information Center, a 64,000-terminal, \$100 million-plus system known as NCIC 2000. The GAO surveyed users in 50 states and 11 federal agencies and found "strong user support for NCIC 2000, its goals and its management." Users said they had been involved in defining requirements and had been kept posted of project progress by FBI officials.



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ORACLE	NO
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INTERBASE	YES
ORACLE	NO
SYBASE	NO

INTERBASE	YES
ORACLE	NO
SYBASE	NO

INTERBASE	YES
ORACLE	NO
SYBASE	NO

**T**HE GAO SAID the library's accounting and financial systems are in such poor condition that significant account balances could not be audited.

The GAO also praised the FBI for its top-management support of the new system and for the agency's use of outside experts in setting requirements and preparing its request for proposals. "The FBI has mitigated risks to the project's success and thus is off to a good start," the GAO auditors concluded.

The GAO found that the Library of Congress' quantity estimates — 89 million items, including rough drafts of the Declaration of Independence and the Gettysburg Address, a Gutenberg bible and several Stradivari violins — "were based on unsubstantiated records accumulated over many years."

Manual and system controls are not adequate to prevent duplicate payments to vendors, although no erroneous payments were found, according to the GAO's report. The library's accounts payable system maintains payment history by vendor and payment date but not by vendor invoice number, so duplicate invoices can be flagged, GAO auditors found.

The GAO also noted that the library's general ledger system is not integrated with subsidiary accounting systems that generate accounting data for accounts payable and owned property. The library has no control policies and procedures to ensure the accuracy of data passed from subsidiary systems to the general ledger, the report said.

The Library of Congress "generally agreed with our findings and recommendations," the GAO said.

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# IN DEPTH

## CASE culture shock

*Automated development demands the investigative and analytical skills of a scientist. No creative artist types, please.*

BY ROBERT GIFFORD

**I**t may not be the Industrial Revolution, but a number of systems development organizations are in the throes of a cultural change. This change is required to fully implement integrated computer-aided software engineering (CASE).

Most organizations are aware that they need to shift their developers from artists to engineers as they implement advanced systems development methodologies, tools and techniques. Developers need to shun the artist's programming flourishes for the rigorous approach of the engineer.

But what is often overlooked is the cultural change needed from engineer performing system design to scientist performing business analysis.

Because integrated CASE relies on analysis as a basis for system design, failures in analysis can be fatal to a CASE project. Therefore, it is imperative that information systems managers understand the differences between the analysis and design tasks and move their development staffs to a more "scientific" orientation (see story page 104).

### From artist to engineer

The term "computer-aided software engineering" reveals a key aspect of the CASE cultural change. CASE has been viewed as a technology that enforces engineering-like discipline as opposed to artistic freedom.

Instead of allowing systems developers to express their creative impulses regardless of productivity and system quality, CASE adds a much-needed rigor to the process. If a systems developer plays the artist while ignoring the way in which the user's business is conducted, the resulting system may be a work of art, but it will not be particularly useful to the business.

Similarly, if an engineer ignores the laws of nature in developing a bridge, jet engine or silicon chip, the outcome may be very creative, but it will not work.

As IS managers implement CASE, they learn there is more to the cultural change than this movement to an engineering-like rigor. An engineer operating within the physical laws of nature is still able to exercise creativity in the design task.

For example, a system designer is free to improve the user-friendliness of an on-line system through creative uses of menus, function keys and screen flows.

Alternative engineering designs, as long as they work, are not inherently incorrect.

Gifford is a manager at Deloitte & Touche's management consulting practice in Los Angeles.

One may be more appealing than another, but this is a subjective evaluation.

Designing an information system using engineering principles is still as creative a task as it was in the artistic era.

### From engineer to scientist

The more difficult and less recognized element of the CASE cultural change is the addition of a task that is inherently not a creative effort. CASE and the methodologies it implements emphasize a task that has been much ignored in the past: business analysis.

The business analysis task leaves no room for creativity. Analysis is analogous to science, not engineering. It is an investigative task, not a creative one.

The objective of business analysis is to discover the business rules and to describe those rules, just as the objective of science is to discover the laws of nature and to describe those laws.

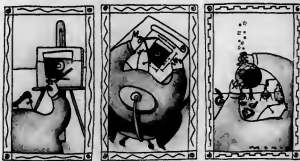
The laws of nature describe the workings of the universe — the orbits of planets around the sun and the structure of subatomic

particles. For their part, business rules describe the workings of a business — whether retail prices are set independently or are the same for each store in a chain, or whether patient registration is the same activity regardless of where it takes place, for example.

In science, physicists uncover the nature of the universe by proposing hypotheses, or models, of the way the world works. Then they verify their models by conducting experiments. The business is the analyst's universe. He uncovers the workings of that universe by hypothesizing and then collecting data to verify or disprove a theory. In his world, theories are the data models and process models he develops. Data is collected by interviewing users who know what the business rules are, conducting joint application development sessions and reviewing existing procedures and policies. The business analyst does not design a data or a process model — he models a business.

Business analysts can be clever in how they go about discovering business rules.

*Continued on page 104*



Michael King

**Artist** The artist receives satisfaction from the act of creating, regardless of the ultimate usefulness of the creation. The quality of the system is defined by elegant or complex program structures, aesthetically pleasing screen layouts or screen flows and exotic (and unused-for) system functionality. System aheads represent another opportunity to continue the act of creation. Project deadlines are an obstacle to refining his art.

**Engineer** The engineer receives satisfaction from building and delivering a system that meets performance requirements and is used by the customer. System quality is defined in terms of system reliability, specifications met and customer satisfaction. A system ahead represents a failure to deliver a quality product. Project deadlines are an important measure of project success, second only to system quality.

**Scientist** The scientist receives satisfaction from discovering and understanding business truth. The quality of analysis is defined in terms of its correctness and depth of insight into the business. System aheads represent a negative impact on the business. A more devastating failure is poor system functionality due to incorrect analysis. Project deadlines are important, but less so than achieving business understanding.

Continued from page 103

For instance, they can interview cross-organizational user focus groups or bring a business expert from a user department onto the project team.

However, creativity is never employed to make up business rules. For instance, even though it may simplify an IS staff's view of its business to treat government customers and corporate customers as the same entity, this creative leap is destined to be counterproductive. Viewing business in this manner works only when the users themselves describe government and corporate customers as using the same data items and when those users perform the same activities in dealing with the two customer types.

The superior description of a business is the one that is proven to be right.

#### Moving business needs

As CASE and the underlying analytical methods are implemented in an organization, it is a mistake for developers familiar with building systems to approach the analysis task as if it were a design task. When systems are created by applying business rules that were created instead of scientifically uncovered, the result will not meet the needs of the business.

Just think what would happen if physicists set out to design their own laws of nature and then engineers used those laws to build bridges. Many motorists would likely wind up in rivers.

Emotional detachment is a must. A conflict results, in science and in systems development, when the physicist or the

## Young Einsteins

You say you'd like to get your development staff thinking more scientifically? Here's how:

- **Make sure the project team spends more time listening to users than talking to them.** Team members should not sell users on what they think the business rules are. They need to listen to users to uncover what those rules actually are.

- **Don't minimize user objections to a data or process model.** Developers must stop to research and understand user objections. Such research may bear out what users are saying or may prove they are overreacting.

- **Don't spend time making diagrams aesthetically attractive — just make them understandable.** It is easy to become so involved in the attractiveness of a particular diagram that emotions get in the way of deeper business insight.

- **Expect change.** Be ready to make sweeping changes to a data or process model based on information gathered from users. The key is always to reflect the true business rules.

- **Until proven otherwise, the user is always right.** Users will always know more about the business than the development staff will.

The user community is the laboratory for the development team's hypotheses (data and process models). Results of experiments (user approval or objections to data and process models) are just as valuable when users disprove hypotheses as when they confirm them.

software developer becomes emotionally attached to an analytical model as "elephant" or "insightful," even though the evidence reveals that the model is wrong.

In this case, developers are applying business rules as they would like them to be. When the system doesn't work, they tell users the system is fine and that it's the business rules that are all wrong. Just think how preposterous it would be for a builder to insist that if a bridge collapses,

it's the universe that doesn't work.

Software developers can't build software using rules they prefer. Instead, they must use the scientific method, developing a model of the business and then verifying the accuracy of the model. The quality of the model rests solely on how well it describes the business.

A key difference between physics and business analysis, however, is that the laws of nature cannot be changed, while

business rules can be. Systems developers may uncover business rules that can and should be challenged.

For example, perhaps corporate and government customers are currently not described by the same data items or administered by the same processes. Yet the company's effectiveness would be improved if they were. Developers should recommend to executive management changes to business rules, policies and operating procedures to reach that end.

#### Changing management style

The ability to improve the way in which the business is operated is an important strategic impact of the IS function. While this ability to recommend changes to business policies and practices may at first seem to be a creative task, it is, in fact, just the opposite. It increases the need for the scientific method in business analysis.

Opportunities for improving business performance cannot be detected unless the current business rules are clearly understood. A concise description of a business is the starting point for understanding its weaknesses. Business analysis, performed in a scientific way, brings that description to the fore.

For advanced systems development methodologies and CASE to mature, it is important that IS clearly understands the changes required of it. Analysis is a big shift from the design task. While development staffs will continue to include engineer types, the successful use of integrated CASE requires scientific analysis. The design work that follows depends on it. •

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# COMPUTER INDUSTRY

## NATIONAL BRIEFS

### Ready for the Chase

► GE Capital Vendor Financial Services recently doubled its portfolio and took a giant stride further into the computer leasing market last week with its acquisition of The Chase Manhattan Corp.'s Leasing Technology Equipment Finance Division. The Stamford, Conn.-based General Electric Capital Corp. business unit paid some \$1.1 billion for its catch. The purchased unit includes Chase's Canton, Mass.-based wholesale vendor finance operation, which is aimed largely at computer manufacturers and will now be known as VFS Information Technology Financial Services.

### True blue

► As it does every year, Princeton, N.J.-based market research firm Total Research Corp. recently asked consumers nationwide to rate some 190 brand-name items in 55 categories in terms of perceived quality. When the poll was tallied, IBM carried off top honors in the personal computer class.

### AT&T signs on

► Software industry association Adapso's Software Business Practices Committee (SBPC), a group dedicated to promoting ethical ways and means among software vendors, bugged a biggie for its growing membership list: AT&T. The SBPC, formed a year ago by a handful of software firms bent on drumming vapors and questionable accounting practices out of their corps via raised consciousness and agreed-on guidelines, merged with Adapso in March.

### Buy ways

► Asked recently whether Computer Associates International, Inc. might be targeting his firm for a takeover, Sterling Software, Inc. founder and President Sterling L. Williams was succinct: "We're buyers, not sellers." Even as he spoke, the Dallas-based software company was preparing to buy Rone, N.Y.-based government contractor Knowledge Systems Concepts, Inc. The deal, details of which were not revealed, is expected to close early next month.

## Incubators nurture start-up firms

BY JOHANNA AMBROSIO  
OF ENR

Times are tough for high-tech start-ups. The economy is down, and for many, venture capital has all but completely dried up. So what's a struggling small fry to do?

Nestle up to its nearest incubator, that's what. Hundreds of high-tech ventures nationwide have discovered these organizations, which provide office space, business services and, most important, contacts with established companies and experts, all at rates far below market prices.

"We grew up in an incubator, and it certainly helped us," said David Hastings, president of Cone Software Laboratory, Inc. in Boothwyn, Pa. Cone develops custom software for Fortune 500 companies, including Scott Paper Co. and Merck & Co. It started up in 1967 with three employees.

The fledgling software firm was a tenant at the Crozer Mills Enterprise Center in Chester, Pa. for three years and, in incubator terminology, "graduated" last year. A privately held company, with an average growth rate of 1,900 percent during its early years, Cone is now in its own

space and employs some 35 people.

"The biggest benefit of being at the center was that it helped us manage a potential customer's perception of us," Hastings said. "Customers were always concerned about the risk associ-

### Planting time

Incubators give fledgling companies healthy help, according to the experts, and computer company start-ups are among those coming incubators to spread up throughout the U.S.

- Approximately 425 incubators currently in the U.S.
- Approximately 20 enter to high technology.
- An estimated 900 incubators are expected in the U.S. by 1995.
- Key advantages for incubated firms: resources sharing, flexible financing and easy access to affordable sales.
- Incubated firms enjoy 85% to 95% success rates, according to the National Business Incubation Association.



© CW Chart: Michael Segner

ated with a start-up. The center had a receptionist and meeting rooms, and it gave us the appearance of being more stable than a guy working out of his basement."

No one has an exact count of how many computer-related ventures nationwide are enjoy-

ing similar benefits. Figures released in a 1990 study by the National Business Incubation Association (NBIA) in Athens, Ohio, suggest that there are approximately 700 high-tech companies in incubators. But those

numbers may be somewhat misleading, since the high-tech category can also encompass areas such as biotechnology and advanced materials research.

NBIA Executive Director Dennis Adkins said there are approximately 425 incubators in the U.S. Of these, 20% to 25%

enter wholly or in part to high-tech firms.

The number will likely grow to about 900 by mid-decade. "It's a rapidly growing phenomenon," Adkins said. But that was not always the case. The nation's first incubator, the Batavia Industrial Center in upstate New York, began in 1959; in 1960, there were still only about a dozen in existence.

A full-fledged incubator is characterized by several criteria and should not be confused with an office park that simply provides space and some business services, Adkins said.

Like an office-sharing arrangement, the average incubator will offer basic business services: phone, conference rooms, equipment such as copiers and facsimile machines, word processing equipment and clerical help. Some of these — such as telephone rental and phone charges — may be included in the rent, while others are handled on a pay-as-you-go basis.

However, the incubator arrangement also includes a panoply of advantages targeted at start-ups — for instance, flexible office space and flexible leases so that start-ups can expand and

Continued on page 112

## PRC seeks stability and new markets

After years of upheaval, the outsourcer aggressively pursues new goals

BY GARY L. ANTHEIS  
OF ENR

MCLEAN, Va. — PRC, Inc. has some \$700 million in annual revenue, 7,500 employees and an established presence in the federal marketplace it has served for more than four decades. In the world of commercial integration, however, the systems integrator and software developer is a relative unknown.

Now, bolstered by a huge outsourcing deal with corporate parent Black & Decker Corp. and endorsed by a new management team, PRC is lighting out for the territory beyond the Capital Beltway.

Among the motherhood-and-apple-pie objectives that PRC has set for itself — such as its striving for quality and employee satisfaction — are hard-earned goals that reflect the aggressive style of the company's new management: Gross revenue by 1993 this year, boost profit and cash by 20%, and grab \$14 million to \$20 million in new commercial and international business.

For the 37-year-old company, the ambitious goals represent a desired return to the stability that preceded recent years of upheaval in the company's ownership and management. The gov-

ernment contractor is now counting on inroads into commercial and international areas to endow it to power-tools maker Black & Decker, which bought PRC's parent, Emhart

## Fraud finding reversed in suit against exes

BY JAMES DALY  
OF ENR

SAN JOSE, Calif. — A federal district court judge last week reversed a jury's \$100 million damages award against Apple Computer, Inc.'s vice chairman and a former company executive in a securities fraud suit brought by Apple shareholders.

Although U.S. District Court Judge James Ware ruled that there was no evidence that Apple co-founder and Vice Chairman A.C. "Mike" Markkula and former Apple executive John Vennard had violated securities law, he ordered a new trial to determine whether Apple violated the law. The jury had earlier es-

teemed Apple.


The ruling stemmed from a 1984 class action lawsuit by Apple shareholders in which the company and several officers were charged with exaggerating the capabilities of Apple's so-called Twigg drive before its introduction. The product was scrapped in September 1983, causing the Apple stock price to drop.

In May, a jury held that Markkula, who was Apple's chief executive when Twigg was introduced, and Vennard, who headed the company's Peripheral Division, had violated securities law and would have to pay some \$100 million in damages.

The judgment was considered significant because few stockholder suits against computer companies have actually gone to trial. It also raised fears among high-technology companies, which became increasingly reluctant about describing the capabilities of future products.

Apple officials said they were "gratified" that the judge had erased the charges against Markkula and Vennard and that Apple was prepared to go to trial a second time.

Patrick Coughlin, an attorney for the shareholders, said he would appeal the order setting aside the damages award.



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# COMPUTERWORLD

Newsweekly of IS

## On-Line chairman gets offer he can't refuse

BY JOHANNA AMBROSIO  
OF STAFF

"CA made me an offer I couldn't refuse."

That is how Jack M. Berdy, chairman of On-Line Software International, Inc., explained his decision to sell the company he founded to Computer Associates International, Inc.

"It was clearly not an easy decision for me," Berdy said. "Even though I'll make a lot of money, it was not easy."

With 1.5 million shares in the company, Berdy stands to make \$22.5 million on the deal.

The downside of the deal, Berdy said,

"is that I give up a company I built. The pieces are that the customers and shareholders benefit, and the employees that do stay with CA should have good futures with a company that treats them right," he added.

### Transfer pending

The number of employees that will go to work for CA will be announced when the deal is closed later this month, according to Berdy.

Berdy said his decision to sell On-Line



Berdy says it was not easy to sell

Software — which he described in a June 1990 interview as "my baby; my moment to my existence" — was reached after meeting informally with CA Chairman Charles Wang.

"We got together every year to talk about the industry and business, and this subject always comes up," Berdy said. "We've never been able to come to terms before. This time it happened — the company was not out looking for a buyer."

He said that his decision to attend med-

ical school and leave the day-to-day running of the company to other executives — which was announced in July 1989 — probably had not made any substantial difference to On-Line Software.

He added that he had recently transferred from George Washington Medical School to Mount Sinai School of Medicine in New York to be closer to the Port Line, N.J.-based firm.

Berdy also talked about frustration with a stock market that had consistently undervalued the stock, making it harder to grow and fund acquisitions.

"Our last fiscal year was a record year, and over the past 12 quarters, we've had consecutive improvements," he noted, "but Wall Street didn't give us any credit for that, and the stock never reacted."

## INTERNATIONAL BRIEFS

### Diversified we stand

► Moving to diversify, Japanese trading company Sumitomo Corp. recently acquired a 2.8% stake in Boulder, Colo.-based disk drive manufacturer Integral Peripherals, Inc. — an old Sumitomo's U.S.-based subsidiary, Sumitomo Corporation of America. Financial terms of the investments were not disclosed. However, privately held Integral Peripherals, which makes 1.8-in. hard drives, is reportedly capitalized at \$6.8 million (see story page 46).

### Cashing out

► Siemens Nixdorf Informationssysteme AG and Ludwigshafen, Germany-based plastics and chemicals company BASF AG are reportedly in negotiations for Siemens to sell its 33.5% stake in the Siemens/BASF joint venture Compuser Informationssysteme GmbH to BASF, which already owns 66.5% of it. According to reports in the European business press, the two companies are eyeing a purchase price in the ballpark of \$58 million. Compuser Informationssysteme is a marketing and maintenance company for IBM-compatible mainframes and peripherals.

### Stretcher Menor

► Prompted by the corporate restructuring of its U.S.-based parent, Mentor Graphics Corp., Mentor Graphics Hong Kong is closing down its local sales activity after six years of operation, according to a report in the Hong Kong business press. Beaverton, Ore.-based Mentor's recently announced streamlining, aimed at paring employee rolls by 15% worldwide, is the first work force reduction in the firm's 10-year history.

### Going local

► Microsoft Corp. has taken a step toward localizing its Asia management structure by creating a Singapore-based regional general manager's position to oversee the company's operations in both Southeast Asia and the Pacific Islands. The new post will be manned by Peter Wong, who resigned last month as regional director of Tech Pacific, formerly known as Imagering. Prior to this move, Microsoft's top Asian operations managers have all been based at the company's headquarters in Redmond, Wash.

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## Sun launches fourth sub

BY J. A. SARGE  
CNET STAFF

METHUEN, Mass. — Adding a fourth subsidiary to its fleet, Sun Microsystems, Inc. is set to launch mail-order firm Sunexpress, Inc. today. The sales arm will not sell Sun systems but will offer Sun's peripherals, software and upgrade supplies.

"About 66% of Sun's orders are under \$5,000. Why should the sales force be working on these?" said Jim Blanche, acting director of marketing for the new company. Users will not have to deal with both a sales representative and Sunexpress, Sunexpress President Dorothy Terrell said. A salesperson can take a user's order for Sunexpress wares and pass it on to the company, she said; alternatively, customers can call Sunexpress direct. Whichever route they chose, Blanche said, customers should receive products within three days of an order.

At this point, only Sun products and third-party educational videos are available from Sunexpress, Terrell said. In the future, however, the firm will carry other vendors' equipment as long as it is customer-maintainable. "We won't offer pre- and post-sale support," Blanche added.

The new subsidiary is located far from Sun headquarters in Palo Alto, Calif., to take advantage of the time difference, Blanche said. This way, Sunexpress has an effective 11-hour business day.

## PRC

CONTINUED FROM PAGE 105

with defensiveness at the notion that the deal might have been a slam dunk.

"There was competition; if our price had been out of line, Black & Decker would have gone elsewhere or kept it in-house," said Gary D. Kennedy, PRC's new president and chief executive officer. The outsourcing deal was also a "litmus test," he added. "There was this feeling that no one wanted us. Black & Decker really wants us."

The feelings of insecurity are understandable in a firm that has gone through two owners in the past five years, not to mention months on the block (see related

story below).

During the ownership tumult of the late 1980s, PRC saw a stream of senior managers come and go. Now, management offices are populated by executives who have recently departed from Oracle Systems Corp. and its systems integration unit, Oracle Complex Systems, including Kennedy and Robert B. Laurence, president of PRC's new and strategically important Commercial Systems Group.

The upheavals took their toll on the rank and file as well: Morale sagged and resumés hit the mail. Another of Kennedy's goals for 1991 is

to reduce turnover by 40%; as of the first of this month, it was already down 33%, he said.

Currently, the company derives 70% of its revenue from the federal government; less than 5% comes from international business. Kennedy wants PRC to shift its business mix so that 50% comes from commercial work and half of that from overseas customers.

"It's a strategy that makes good sense, but there's nothing new or innovative about it. It's the same as they had at Oracle Complex Systems," said computer industry analyst Utric Weil, principal at



PRC's Kennedy: 'Black & Decker really wants us'

## PRC: Then and now

**F**ounded in 1964 by several alumni of Rand Corp., Planning Research Corp. enjoyed 32 years of independence, 22 years as a public company. It was acquired in 1966 in a friendly takeover by Rohat Corp., an industrial products supplier. A year later, Rohat picked up another Washington, D.C.-area government systems contractor, Advanced Technology, Inc. (ATI).

In 1988, the company became the target of a hostile takeover attempt but was rescued by "white knight" Black & Decker. Looking for ways to reduce the crushing debt taken on to finance the Rohat buy, Black & Decker put Planning Research and ATI up for sale, then pulled them off the market when offers came in too low. In January of this year, Planning Research and ATI were merged and renamed PRC, Inc.

Some industry observers speculated that Black & Decker will put PRC on the block again if market conditions improve

and PRC's Gary D. Kennedy's diversification efforts make the firm more attractive. "Kennedy is a tough manager, and that's what PRC needs," said Thomas Quinn, vice president at Kidder, Peabody & Co. "There's been a lot of speculation that he was hired to shape up PRC into a viable condition."

However, Kennedy said Black & Decker will be less likely to sell PRC as its financial results improve and it contributes more to Black & Decker's own bottom line. Kennedy acknowledged that PRC's earnings have declined for the past three years but said "the trend has been reversed this year."

The diversification strategy is both ambitious and expensive, according to industry analyst Utric Weil. "Black & Decker must be putting up a lot of money to do this," he said. "The danger is that they will get tired of supporting the operation before PRC shows results."

GARY H. ANTHERS

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Washington-based Weil & Associates. "They are doing the right things. Overseas, they are striking alliances, but they are fighting very aggressive and entrenched competitors such as Electronic Data Systems Corp."

Nevertheless, the potential rewards are high. "The margins are unbelievable in international — 30% to 40%," Kennedy said.

According to Laurence, PRC is an anomaly among its competitors in that it has virtually no international business. But he said

he aims to catch up. Taiwan, Hong Kong and Europe are especially promising targets. As eroding profit margins drive large hardware vendors overseas and into software and services, he said, PRC is benefiting.

For example, the firm has teamed with Digital Equipment Corp. in Hong Kong to provide turnkey systems running PRC applications such as computer-aided vehicle dispatching, an area in which PRC has been the

market leader for years. Last week, PRC planted its flag Down Under with a Sydney, Australia-based subsidiary and a cooperative marketing deal with DEC Australia.

#### Joining forces

In the UK, PRC has joined forces with International Computers Ltd. (ICL) to develop and sell image-management systems. PRC hopes to leverage expertise it gained on two huge government projects — one for the U.S. Navy and another for the U.S. Patent and Trademark Office — into commercial areas served by ICL.

While it is aiming entrenched

expertise at new markets, PRC also has its sights fixed on new technologies for its traditional customers. Last week, for example, the firm tied up the exclusive federal sector marketing rights to an object-oriented database management system made by Burlington, Mass.-based Objectdesign, Inc.

Jon S. Korin, business development vice president, said PRC is not going after "mega-facilities management (contracts) in the Kodak style," which he



Laurence aims to extend PRC's international business

called commodity-like. Rather, PRC seeks outsourcing deals that allow it to add value by combining technologies and applications in which the firm has extensive experience.

According to Korin, PRC is increasingly seeking long-term customer relationships that allow it to provide ongoing functional expertise laid over computer operations. "We are strategically moving toward the back end of the life cycle," he said.

#### PRC's strategic focus

Black & Decker's systems integration subsidiary — and outsourcing vendor — is gearing up for a move beyond its traditional government contract duties

Current niche	Target niche
<b>Document imaging</b>	
• Government	• Public safety
• Utilities	• Real estate
<b>Computer-aided dispatch</b>	
• Real estate	• Utilities
	• Manufacturing
<b>Database publishing</b>	
• Real estate	• Government
	• Retail/Wholesale
	• Manufacturing
	• Financial services
<b>Software engineering</b>	
• Government	• Real estate
• Public safety	• Utilities
	• Manufacturing
<b>Systems management/Network integration</b>	
• Government	• Utilities
• Real estate	• Manufacturing
<b>Engineering</b>	
• Government	• Manufacturing
• Utilities	

Source: PRC, Inc.

CV Chart Michael Higgins

## Epson shake-up to benefit customers

BY MICHAEL FITZGERALD  
CW STAFF

TORRANCE, Calif. — Epson America, Inc., is about to reorganize itself to sharpen its focus on satisfying its customers, according to a company announcement earlier this month.

Analysts called the move a response to a sliding market share, but the printer and IBM-compatible personal computer maker said its share remains stable.

The company issued a statement saying it needed to rebuild customer loyalty through "good

products, competitive prices and reliable support." In the statement, Gene Kunde, Epson America's chief operating officer, said these steps are "essential to remaining competitive."

Epson has reinstated its toll-free customer service number and has created a new Corporate Support Group to be run by John Lang, executive vice president.

Epson's move comes as several analysts said the firm has lost share in the last two years.

"I think it's a window into a larger understanding within the company that they've got prob-

lems," said Lee Levitt, distribution analyst at International Data Corp. in Framingham, Mass. "It's a good move, and [it] indicates they realize they've got to be more customer-oriented."

Peter Bergman, director of product management at Epson, said the company's share remained in the 3% to 5% range and said the reorganization actually is prompted by the J.D. Power and Associates survey on customer satisfaction.

The shuffle follows price cuts announced by Epson late last month.

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# Do incubators really work?

BY JOHANNA AMBROSIO  
CW STAFF

There is little doubt that incubators have helped individual firms grow and have even contributed to the state economies in which they are based, experts said.

However, these experts added, that still leaves the question of whether the incubator concept itself is effective.

"The issue is, would these companies be successful anyway, even if they had not been in an incubator? So far as I know, there's no comparison of firms in incubators with those that aren't," said Timothy J. Bartik, senior economist at the W. E.

Upjohn Institute for Employment Research, a nonprofit independent research organization in Kalamazoo, Mich.

Another question, Bartik said, is how well the cost of running the incubators and providing services for the start-ups is justified by the benefits of having the companies become established.

Even when obtained, the statistics are likely to be skewed. Many incubators, perhaps understandably, screen out those companies that do not look like viable commercial prospects. This serves to "increase the percentage of wins," said David V. Gibson, associate director of the Center for Technology Venturing at the University of Texas at Austin's Graduate School of Business.

On the other hand, Gibson said, "starting up a business, especially a high-tech business, is very risky. Start-ups fail by their very nature, and so we should expect some failures."

Thus far, the numbers that have been accumulated tell a strong success story. The National Business Incubation Association (NBIA) in Athens, Ohio, released a report last year that claimed an 80% to 90% survival rate for companies in incubators. Compared with the Small Business Administration's estimate that four-fifths of start-

ups fail within their first five years, incubator-nurtured companies seem healthy.

A 1990 study by the Pennsylvania Department of Commerce said that 723 companies had been in the 45 state-supported incubators between 1983 and 1989. Some 92% of those were still in operation at the time of the study, together employing 6,100 people.

Incubator enthusiasts cited an indirect benefit: "There's a momentum that is built, an of entrepreneurship mentality that permeates the community at large," said Michael D. Marvin, chief executive officer of MapInfo Corp. in Troy, N.Y., and an affiliate of the incubator program at Rensselaer Polytechnic Institute, also in Troy.

Marvin said that when the incubator program began in 1980, there were about a dozen high-tech start-ups in the area, and now there are about 100. "These additional start-ups would not have occurred, certainly not at that rate, without this leadership," he said.

However, even NBIA Executive Director Dinah Adkins acknowledged that no one really knows for sure if the incubators are working.

"An industrywide study hasn't been done, and there is a lack of data. We're trying to come up with a protocol of evaluation for use by all our members," Adkins said. "We're still a relatively young industry."

## Incubators

CONTINUED FROM PAGE 105

contract at will. In contrast, most commercial landlords pursue leases of at least five years' duration. Depending on how the incubator is subsidized, some charge lower rates than others in the same area.

The critical factor distinguishing incubators from office parks and space-shares is access to business and technical consultants who assist the start-ups in every phase of operation. This can include both in-house experts and a network of local resources such as college professors, attorneys and financial assistance sources.

Incubators come in all shapes and sizes and with a variety of backers. Most are funded by state-financed economic-development programs that seek to create jobs and expand the local economy. About 15% of all incubators are for-profit.

Virtually all advisory help is provided gratis. Most incubators, however, make no guarantee that start-up funding will be provided; they simply point the entrepreneur in the right direction.

The biggest benefit, incubator users say, is the networking with industry gurus and with other start-ups. "It multiplies your effectiveness," said Joe Straub, marketing manager at Privac, Inc., a supercomputer start-up in Falls Church, Va. "It's like having several more full-time people working for you."

Privac has been working for the past several months with the incubator at George Mason University in Fairfax, Va. Straub said that the incubator's management is also helping to connect the firm with potential technology partners and customers in the Washington, D.C., area.

"I'm not selling a building," said Alice R. Crowell, director of the Application Development Center, an incubator at the University City Science Center in Philadelphia. "I'm selling an environment."

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# COMPUTER CAREERS

## How outsourcing impacts IS managers

Part I of a two-part series that focuses on changes in careers after a firm has outsourced its IS operations.

BY EMILY LEINPUSS  
SPECIAL TO CW

Information systems executives left behind to mind the shop after parts of their operations have been outsourced may suddenly feel like fish out of water. They're forced to learn almost an entirely different set of job skills. In most cases, however, these managers have adapted fairly easily. In fact, some say the shift in job roles has actually opened more doors in their careers in the long run.

A large bulk of the responsibility IS managers take on in overseeing outsourcing contracts is monitoring the outsource vendor's work.

You have to make sure that the outsource delivers on promises, make about response times, timely completion of work and rapid response to systems problems, says John Maher, first vice president at Dollar Dry Dock Bank in White Plains, N.Y. This means that IS managers will likely have to attend weekly meetings with the outsourcing vendors, he says.

But the most dramatic role change after outsourcing is one of learning to become a manager of contracts instead of being a manager of people.

"You no longer have to worry about personnel issues associated with technical positions, which took considerable management time," says Laurence Lisa, MIS manager at Meritor Savings Bank in Philadelphia.

### Role transition

To smoothly transition to this new role, an IS manager must be able to understand relationships between companies and to manage outside suppliers, says Vaughn Howe, director of data center services for corporate IS at Eastman Kodak Co. in Rochester, N.Y., which has established major outsourcing alliances with IBM, Digital Equipment Corp. and JWP Businessland.

The IS manager "must also learn how to deal with the profit and loss margins of the business and learn how to leverage the alliance for a win/win situation on both sides," Howe says.

Another change in IS manager will find after outsourcing is that he will no longer have procurement responsibilities.

The release from responsibility of hardware procurement was

a relief to Fred Cisewski, senior vice president of MIS at BankSouth in Atlanta, which outsourced its data center, computer operations, technical support and network operations to IBM. IBM then contracted much of the work to Computer Task Group in Buffalo, N.Y.

"I used to spend 30% of my time in some phase of the procurement process," Cisewski says.

Because IS managers involved in outsourcing no longer have to manage personnel and procurement, they are usually given more general management responsibilities.

For example, Cisewski is now responsible for item processing and all bank security. He adds that he still has full responsibility for all the computer operations that were outsourced. "My responsibility hasn't changed, but now I don't have to worry about how they do it. As long as they meet a service level need, I don't care what technology, what boxes they use," he says.

Lisa says he now has responsibility for retail back-office opera-

tions at Meritor Bank. He adds that if an IS manager is looking to advance to a higher level of general management, outsourcing can act as a catalyst.

However, it is a disadvantage if a person wants to manage the technical functions of a firm, he says.

While outsourcing can be beneficial to middle- and upper-level technical managers, executives in the very top positions, such as chief information officers, generally do not fare well.

"As a general rule, the higher one is in an [outsourced] organization, the lower their chances are for survival," says Mike Williams, chief financial officer at *The Houston Chronicle* and former executive vice president, manager of bank operations at First City Bank Corp. in Houston.

Oftentimes, there just isn't enough responsibility in a company to match the scope of what the CIO's job had been, Williams says.

Also, he says, there can be a feeling within the company that

top-level executives, especially those who managed the outsourcing arrangement, are tainted by all the changes that have transpired.

### 'A game pigeon'

"The senior guy is almost assuredly a game pigeon," says Larry L. Bettinger, executive vice president at UFB Financial Corp., and former CIO at Meritor Bank. Bettinger says he knew this was the case when he architected outsourcing at the bank.

There were a number of reasons for his decision to leave the company after outsourcing had been completed. The first was that the downsizing of his work functions would be extreme.

The second reason was objective. Bettinger says he felt that he could manage the outsourcing arrangement with a much clearer mind if he knew he would not be a part of it.

The third reason was financial. He was given a "golden parachute."

Bettinger also says that while outsourcing can be beneficial to one's career, it is always "traumatic, devastating and not fun for most."

Next week's article will look at issues that IS staff members face when they move over to outsourcing providers.

Leinpus is a free-lance writer based in Saratoga, Pa.



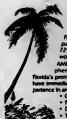
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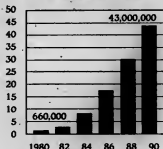
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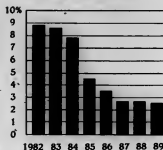
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### Systems Operator

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### Systems Programmer

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### Systems Engineer

### Systems Manager

### Systems Supervisor

### Systems Director

### Systems Coordinator

### Systems Assistant

### Systems Operator

### Systems Technician

### Systems Specialist

### Systems Analyst

### Systems Programmer

### Systems Administrator

### Systems Engineer

### Systems Manager

### Systems Supervisor

### Systems Director

### Systems Coordinator

### Systems Assistant

### Systems Operator

### Systems Technician

### Systems Specialist

### Systems Analyst

### Systems Programmer

### Systems Administrator

### Systems Engineer

### Systems Manager

### Systems Supervisor

### Systems Director

### Systems Coordinator

### Systems Assistant

### Systems Operator

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### Systems Specialist

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**"...Our statistics indicate that recruitment advertising in Computerworld attracts more qualified and placeable CASE candidates than any other source."**

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Vice President,  
Advanced Technology Practice  
Halbrecht & Company, Inc.

True to its motto, "Your Competitive Edge...Is People," Halbrecht & Company is well on its way to claiming top spot as America's leading CASE recruitment firm. With almost 20 years in the business and offices in Fairfax, VA, Old Greenwich, CT, and New York, NY, the firm provides national search and recruiting services on a contingency, and executive search basis. For Kurt "CASE" Wilkinson, Vice President, Advanced Technology Practice, recruitment advertising in *Computerworld* fulfills a two-fold purpose: generating quality resumes and maintaining its premier image among clients.

"Because of our expertise in leading-edge technologies, our clients look to us as management consultants rather than simply recruiters. So it's crucial that we focus on senior-level CASE tool and methodology professionals with strong I/S backgrounds. Our clients, including Fortune 500 companies, CASE tool vendors, and large consulting firms, typically have requirements for information engineers, senior consultants, data modelers, and I/S planners. Our recruitment advertising in *Computerworld* has positioned us as America's leading CASE recruiting firm.

"We consistently get up to 40 responses for every *Computerworld* recruitment advertisement we run. Since June 1988 we've placed over 70 I/S professionals in CASE positions, and a significant percentage have been direct placements from our *Computerworld* advertising. In fact, our statistics indicate that recruitment advertising in *Computerworld* attracts more qualified and placeable CASE candidates than any other source.

"In addition to generating resumes that

closely match job specifications, we also get other valuable benefits from our *Computerworld* recruitment advertising. For example, the advertisement we ran prior to attending CASE WORLD in Chicago opened new doors with contacts that I otherwise would not have made at the show. Also, ongoing contacts we establish at companies, as well as referrals from vendors who recognize our name, help us secure future placements and even acquire new clients. Dollar for dollar, our national recruitment advertising in *Computerworld* is significantly more effective than classified advertising in local newspapers.

"Right now I believe we are strategically positioned to facilitate the hiring cycle for candidates and clients, whether they are vendors, consulting types or end-users. This market is still in its infancy, with the major growth period still ahead in the 90's. Our greatest challenge is maintaining a competitive edge. As we continue marketing long-term, Halbrecht & Company is dedicated to strengthening its market focus and positioning through its highly successful recruitment advertising program in *Computerworld*."

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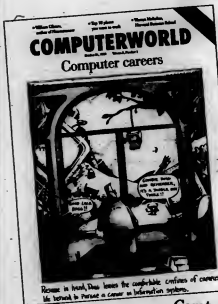




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**Planned Editorial Features:**

(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Prospects for minorities in computing.
- Merits of an Electrical Engineering degree for a computer career.
- Information Systems salaries from Computerworld's annual survey with the Data Processing Management Association.

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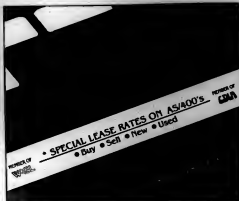
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“The people who we believe can benefit most from our custom-configured systems and customized solutions are MIS Directors and Vice Presidents, Vice Presidents of Finance, CIOs, and Managers of Technical Resources at the Fortune 1000 and Non-industrial Fortune 300. Clearly, Computerworld is what the industry reads first - plus it has a high pass-through rate and long shelf life. And its readers are the right readers - those with decision-making authority. So Computerworld’s audience is the ideal customer set for us.

“So, when we advertise in Computerworld’s Classified Marketplace, we’re directly targeting an audience who has a high volume of Digital requirements - and influences the kind of purchases most appropriate to our expertise. That makes Computerworld’s Classified Marketplace the ideal place to focus on the short-term rental needs of DEC customers.

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“Our weekly advertising generates a consistent stream of serious calls - not only at our headquarters in Hauppauge, New York, but also at our regional offices in Seattle and Minneapolis. Computerworld’s Classified Marketplace is definitely where we want to be 51 times a year.”

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## NEWS SHORTS

### Paraspic/CA deal advances

It was the week of tending to new property for Computer Associates International, Inc., which two weeks ago commenced a merger with Paraspic Systems, Inc., a Little, IL-based mainframe systems house. CA Chairman Charles Wang traveled to Scottsdale, Ariz., last week to address the annual user's meeting for Telos, Paraspic's computer-aided software engineering tool. "He promised within 60 days of the acquisition to issue a paper on the future [of Telos] and other Paraspic products," said Telos User Group President Andrew Galst. Nevertheless, Galst described the Telos meeting as a "rumor mill," as attendees nervously speculated about whether CA would honor Paraspic's commitment to develop Telos. Later in the week, CA said that its acquisition of Paraspic had progressed from an agreement in principle to a definitive agreement for CA to buy Paraspic stock at \$16.15 a share.

### HP to drop Motorola line

No time frame is set, but once Hewlett-Packard Co. satisfies current customer commitments for its workstations based on Motorola, Inc.'s 68040 processor, the company will phase them out, according to Lew Platt, executive vice president at HP's computer systems organization. HP will hold on to its Intel Corp.-based personal computer line, but that will be the only outside CPU in its portfolio, which runs from PCs to reduced instruction set computing mainframes.

### New role sought for DARPA

The Carnegie Commission on Science, Technology and Government told a joint congressional panel last week that the Defense Advanced Research Projects Agency, which has sponsored development of a host of computer and communications technologies over the years, should be transformed into a National Advanced Research Projects Agency with a greater focus on technologies for both commercial and defense uses. The commission also recommended giving the National Institute of Standards and Technology a stronger role in supporting pre-competitive, generic research and promoting diffusion of technology skills, as well as a greater emphasis on the fact that the Pentagon has gone from a technology leader to a follower.

### Cutbacks at Boole & Babbage

In an effort to curb fall costs, Boole & Babbage, Inc. announced a cost-reduction plan last week. The plan included a one-time charge of about \$1.5 million to cover layoffs costs for 10% of its work force, or about 75 employees. The company also will implement accounting changes that will align it with procedures proposed by the American Institute of Certified Public Accountants.

### IBM's Mondello in jobshift

Anthony Mondello, who until recently was IBM's director of office systems development for programming systems, is no longer responsible for overseeing OfficeVision. His position will not be filled. However, Mondello will sit on a newly created and executive steering committee for OfficeVision, which will report to Earl Wheeler, an IBM senior vice president and general manager of Programming Systems. An IBM spokesman said last week that Mondello is now vice president of the worldwide applications development consulting practice and is charged with bringing consulting and services into the applications development area.

### No blank checks in IS

Information services technology spending will rise slowly over the next year and will not approach precrisis spending until late 1992, predicted management consulting firm Robert L. Dush & Associates, Inc. in Marietta, N.J. The firm said its analysis of third-party surveys of corporate behavior plans reveals that technology buyers have turned more cautious. They are also having to respond to stricter questions from senior management pertaining to how well investments match business strategies, costs and risks of outsourcing alternatives and business trade-offs if investments are not made.

## Wellfleet aims industry at heavy-duty routing

BY JAMIE WEXLER  
and CHRISTOPHER LINQUIST  
CW STAFF

BEDFORD, Mass. — The leading router vendors are gearing up to accommodate serious networkers voracious for bandwidth and pushing the envelope on throughput.

Wellfleet Communications, Inc., based here, last week confirmed reports that early next year, it will start rolling out routers with the speed and capacity to serve as packet-switching backbones in a box.

Archival City Systems, Inc. in Menlo Park, Calif., said it would migrate its existing C-bus architecture toward "multiple C-buses hanging off some other higher speed bus" during a similar time frame to accommodate burgeoning internetwork traffic.

Wellfleet's industrial-strength routers will descend from existing models and connect 16 or 52 networks across a lightning-speed, proprietary 1G bit/sec. backbone. With the new Wellfleet line, the company is increasing user emphasis on network performance and availability, said Karen Barton, director of product marketing.

Users' expectations are being fueled by the growing dependence of businesses on their information networks, users and analysts observed. As rapid-fire local and wide-area networking technologies kick in, users need a bigger "funnel" through which to pour traffic from one network to the next.

### Power to the mesh

For example, John Scoggin, network operations supervisor at Delmarva Power & Light Co., said he is mulling out his Ethernet backbone because of "a hefty collection of PCs and RISC workstations" exchanging bandwidth-rich files. Scoggin said he is on the way to the 100M bit/sec. speeds of Fiber Distributed Data Interface (FDDI) LANs and SIM bit/sec.-and-up cell-relay technology in the wide area.

Scoggin said he will invest in Wellfleet's new \$94,000 to \$290,000 Backbone Node if the per-packet price falls within budget. He said he already plans to add two high-end Wellfleet routers to his network next year "to reduce our single point of failure exposure."

To protect against network downtime, Wellfleet has split the

1G bit/sec. backbone into four 256M bit/sec., load-sharing paths accessed randomly by each processor serving each network interface card. If one path fails, each processor has access to three others.

A Wall Street user currently running today's FDDI LANs both as backbones and stand-alone networks said his company is "blissfully up" about the technology. Jeff Marshall, a managing director at Bear, Stearns & Co., added, "We haven't seen anything so fast."

Marshall explained that "we're looking at enhanced routers to further integrate the higher speed LANs. When Department A wants to talk to Department B and the files are getting bigger and bigger, you have to go faster and faster."

Michael J. Howard, president of Inflexion Research Institute, Inc., said, "Only a handful of sites could effectively use such speeds today. The major message is to tell users considering routing investments that the next technology to accommodate them is coming."

Wellfleet's new routers forward nearly half a million data packets/sec. between networks, the firm said. That compares with Wellfleet's throughput of 188,500 packets/sec. on its high-end devices and 55,000 packets/sec. on Cico's high-end router, Cico said.

## A Windows-based Wordstar is born

BY CAROL HILDEBRAND  
CW STAFF

Wordstar, Inc. will join the throng of Microsoft Corp. Windows word processor makers when it announces its Windows-based word processor next week.

Analysts familiar with the product praised it as feature-packed and easy to use but said that Wordstar really needs to market it more aggressively than in its west.

"They have a functionality lead, but they need to do more than giving away Wordstar

sweatshirts at Comdex," said John Dunkle, an analyst at Workgroup Technologies, Inc. in Hampton, N.H.

Among the features is a customizable button bar similar to the SmartIcons in Lotus Development Corp.'s Ami Pro and a ruler along the top for point-and-click tab and column setting, as well as basic features such as a built-in thesaurus, a spell checker and cut-and-paste abilities. Wordstar for Windows is compatible with previous versions.

Dunkle said he considered the package's picture file import and export abilities to be superior to

those of Microsoft's Word for Windows.

The San Luis, Calif.-based software firm could use a product hit to stem both market share erosion and financial woes. The company has lost money for the past two years, from \$4.5 million in 1990 to \$7.5 million in fiscal 1991.

Computer Intelligence/Info-corp. a La Jolla, Calif.-based market research firm, said, Wordstar's installed base is also shifting; its namesake DOS offering has lost several percentage points to about 1.4% of U.S. word processors.

## IBM and Xyquest withhold their Signature

BY CAROL HILDEBRAND  
CW STAFF

IBM and Xyquest, Inc. are not yet putting their John Hancock on Signature, their joint word processing effort. Sources close to both firms said the announcement, originally slated for tomorrow, has been put on hold.

Although neither firm would comment on the reason for the delay, industry observers said IBM is not about to allow a premature announcement to cloud

the product's reputation. "It's pretty important that IBM get this right," said Dan Nease Jr., an analyst at Computer Intelligence/Info-corp.

Analysts who had seen demonstrations questioned the wisdom of releasing a character-based version first. "It's like coming to the party a little late," said Mary Cotti-Loffredo, an analyst at market research firm International Data Corp.

Signature is the suggested migration path for users of both

IBM's workhorse package, Displaywriter, and Xyquest's Xywrite word processor, although IBM plans to support Displaywriter users uninterested in migrating to the new family until the end of 1992 (CW, March 11).

The DOS-based product features a proprietary user interface with pull-down menus and editable what-you-see-is-what-you-get display. Users can choose between the menus or continuing with character commands to ease the transition.

# IBM turns up pressure to move to ES/9000

BY ROSEMARY HAMILTON  
CW STAFF

IBM made a series of moves last week to nudge its users onto the newer Enterprise System/9000 mainframe platform and hasten the end of the 3090 line.

"The focus now is on functionally separating" the two platforms, said Frank Gena, a vice president at Technology Investment Strategies Corp. in Framingham, Mass.

During the past year, IBM positioned the mainframe lines as closely linked in an effort to provide easier migration. The firm even offered some of the newer ES/9000 technology, such as the Ecom channel architecture, to users of the older 3090s.

Last week's announcement signaled a shift in priorities:

- Seven additions to the ES/9000 family included lower end, water-cooled models with new-generation engines and powerful air-cooled models.
- IBM said it will no longer sell 3090 E or S models or upgrades of them as of Dec. 10.

- Migration deals with financial incentives were offered for 3090 users to upgrade to ES/9000.

- Functional enhancements, such as extensions to the Ecom channel architecture, were announced exclusively for the newer ES/9000 processors. The Ecom options would extend the distance allowed between storage devices and processors from five miles to 37 miles and speed the data transfer rate from 10M bytes/sec. to 17M bytes/sec.

It is critical for IBM to make the ES/9000 line as appealing as possible, IBM will be trying to make up for a poor first half of its current fiscal year, when mainframe shipments were off.

"It was a terrible first half,

and I'll be glad to admit that," said Carl Conti, an IBM senior vice president and general manager of the Enterprise System line of business. "With the economy and the [Persian Gulf] war, capital investments were put on hold. Customers wanted the high-end [ES/9000], and those weren't available."

However, some analysts suggested that the marketing plan that so closely linked the two mainframe generations also contributed to the slowdown. It confused some users and encouraged others to plan a long-term move to the new platform. "They gave customers excuses not to buy [new processors] from the factory," said James Camell, a vice president at Gartner Group, Inc. "They've got to differentiate the product line."

Last week, Conti said IBM will sell 26 ES/9000 models, ranging from the low-end, rack-mounted 9370 follow-on up to the top-of-the-line Model 900, which clocks in at the 200 million instructions per second range.

This lineup will include the so-called hybrid models — lower end, water-cooled models announced last year that use a 3090 engine in an ES/9000 package. But when the water-cooled models announced last week ship next year, the requirement for the hybrids should be minimal. The new models are in the same performance class as the hybrids but use the more powerful Summit engines.

A major push will be coming from IBM in the next several weeks to ship as many of the ES/9000 top-of-the-line models as possible. The high-end Models 820, 860 and 900 use new-generation, or Summit, technology and will be generally available this week, Conti said.

## Troubled year

FROM PAGE 1

IBM may have caused some of its own problems by offering hybrid mainframes that were supposed to ease the transition from old to new but instead confused many customers, users said.

The machines, which are

**Shrinking pie**  
IBM's ES/9000 is selling into a market that has a smaller appetite for mainframes

Number of large-scale systems shipped in the U.S.

1986	.....1,690
1987	.....1,680
1988	.....1,320
1989	.....1,290
1990	.....1,170
1991	.....1,050
1992	.....1,100

\*Estimated.

Source: International Data Corp.  
CW Chart: Janet Gorenz

3090 technology insiders surrounded by ES/9000 frames and power supplies, were designed to be upgraded with minimal effort but have been met by only marginal success. A scant 6% of 700 sites polled by Computer Intelligence/Intosoft have upgraded existing systems to ES/9000 models, the La Jolla, Calif.-based market research firm said.

"Right or wrong, users perceive the hybrids as old technology — only priced a lot higher," said Frank Gena, a vice president at Technology Investment Strategies Corp., a research firm in Framingham, Mass.

Many users contacted by *Computerworld* agreed. "I wasn't impressed with the hybrids. I would have rather seen a final product," said Ron Orban, director of computer operations at NBC's Bircfield Manor, N.Y., data center.

Orban and other midlevel

3090 users said the transitional machines failed to sway their buying decisions. "The difference between the [3090] J and the new machines is minimal, and it doesn't warrant the price," said Gabriel Pety, group vice president of MES at PNC Financial, a Providence, R.I., bank.

### Choosing hybrids

Meanwhile, some high-end customers such as Metropolitan Life Insurance Co. did go the hybrid route to position themselves for future high-end ES/9000 purchases. The hybrids "don't give us additional capacity, but they're a stepping-stone to the future," said Ron Leckman, assistant vice president of the New York company's IS department. Met Life signed a two-stage upgrade deal with IBM that included a "sizable" discount on three Model 720 hybrids and pure new technology machines, Leckman said.

The ES/9000's biggest competitor may be the base of older IBM systems. Just 29% of installed and ordered ES/9000s are replacing 3080 and 3090 models, Cliffinco said. Most users said they are satisfied with most existing mainframes and will hold on a little longer, at least until ES/9000 prices drop.

"Our 600J is pretty well underutilized now, so we just don't need what IBM's selling right now," Orban said.

### Status report

IBM is beginning to meet some of its System/390 goals

Goal	Product	Where things stand
Easy transition from System/370	ES/9000 hybrid models	Available now
More powerful mainframes	ES/9000 Models 820, 860	Shipments begin this month
New channel architecture	Ecom	Initial features shipping
Processor complexes	Styxplus	Initial price available
Dedicated processors	Integrated cryptographic feature	Available now

CW Chart: Janet Gorenz

## Users not in big hurry to make upgrade to 3390

BY JEAN S. BOZMAN  
CW STAFF

IBM's announcement of its 3390 Model 3 high-end disk drive fell somewhat flat in the information systems community last week, as users said they had few compelling reasons to move to it immediately.

Long expected, the Model 3 has 50% greater capacity than the 2-year-old 3390 Model 2 and storage costs about \$11 per megabyte, down from about \$14. The cost of a single drive ranges from \$148,000 to \$337,900, depending on capacity.

A new thin-film media allows the IBM 3390 disk platter to carry more tracks than before, and

3390s can be installed in the same string as older 3380 Model 1 and 2 drives. However, its average access time of 15 msec is slightly slower than the Model 2's 12-msec time.

"The Model 3's access times are slower because the drive's arms have more of the disk platter to cover," said Robert Galery, a senior storage analyst at Technology Investment Strategies Corp. in Framingham, Mass. "Before this, IBM wasn't using all of the disk platter surface." The Model 2 stored 22.7G bytes, while the Model 3 stores 34G bytes.

User enthusiasm for the IBM 3390 Model 3's higher storage capacity was dampened by news

of the slower access times. "The flexibility of the new 3390 Model 3 is great," said Ron Krieger, resource manager at the State of Illinois' Department of Central Management Services, "but you do care about a slower access time if you're looking at a busy machine that is limping along."

Other users were more positive about the new drive but said they were waiting for IBM-compatible manufacturers Hitachi Data Systems Corp. (HDS) and IBM Corp. to respond to the IBM announcement.

Amabul may not make an immediate announcement, said Al Richard, manager of storage systems marketing at the firm. "We will bring out our 6390 box as

planned," he said, noting that the 30G-byte Amabul 6390 was announced this past March. "We don't need to respond that quickly because our box is smaller than IBM's, and it only takes six of our drives to fill out a 180G-byte subsystem."

HDS said it expects to make an announcement this week in response to the Model 3, probably based on a Hitachi Ltd. 35G-byte drive being sold in Japan, analysts said. Amabul's response may be delayed by compatibility difficulties with its disk drive controller, analysts speculated.

The 3390 announcement was part of a wide-ranging introduction of IBM storage devices:

- The IBM 9340 direct-access

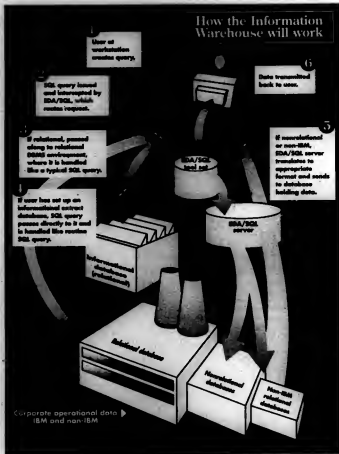
storage device subsystem, a rack-mounted disk drive for use with IBM midrange computers, such as the IBM 4381 and lower-end Enterprise System/9000 air-cooled models. The 9340 drive can hold 2G- to 48G bytes of data, depending on the number of drive units ordered.

- The IBM 9570 Disk Array Subsystem, which can move data at more than 50M bytes/sec., is intended for use with scientific computers, IBM said. The disk drive is based on the High Performance Parallel Interface standard for drives with redundant arrays of inexpensive disks.

- Four new models of the IBM 3995 Optical Library Data-server line, including two write-once drives and two rewritable drives, are slated to ship in late 1992.

At least one user agreed. Alamo Rent A Car, Inc. in Fort Lauderdale, Fla., plans to upgrade to a Model 900 from a hybrid Model 580 within 30 to 60 days, according to Tim Leone, head of IS. "We've had a year of waiting for the product, but what I've seen, I think 820 and 900 users will be extremely pleased."

Senior Editor Rosemary Hamilton contributed to this report.



CW Chart: Michael Nagata

## Warehouse wins praise, but lacks many details

BY ROSEMARY HAMILTON  
CW STAFF

IBM last week released its long-range plan to give customers access to corporatewide data.

While some users contacted were just reviewing the Information Warehouse announcement, they said that any plan to make data more available to end users would be welcome.

Industry analysts said that while the concept of the Warehouse sounded good, there are still many details that IBM needs to clarify. Providing easy access to all kinds of data involves a complex series of front-end access tools, communications facilities, distributed database functions and data retrieval.

With the Information Warehouse announcement, IBM revealed that a number of its existing products can be used to create a warehouse environment. It also announced a product set from its primary Warehouse partner, Information Builders, Inc. (IBI), that will play a critical role in giving users access to non-IBM and nonrelational data.

Finally, IBM announced that several third-party software companies, including rival database providers, will support this framework. Longtime database competitors such as Computer Associates International, Inc., and Oracle Corp. announced support for IBM's Distributed Relational Database Architecture, which is a key component of the

### Information Warehouse.

However, IBM did not make clear exactly how much up-front work would be required of users to perform to set up such an Information Warehouse, nor did it specify what would control this environment.

For example, one complex task will be deciding what data should be set up in a separate informational database and what data is best left in the corporate databases for direct access by end users.

Users interested in adopting the Warehouse immediately can begin using the IBM tools for data extraction and data propagation between IMS and DB2 databases. The tool set will begin shipping next month.

### Done in motion

Cigna Corp., an early user of the EDA/SQL tool set, is using the IBI products to pull data from mainframe databases into a Lotus Development Corp. environment on the desktop.

There will be two primary approaches to Warehouse data. A user working in a strictly relational environment can have a warehouse set up.

However, many users will likely need to get at data in non-relational formats, and this is where the IBI tool set comes in. EDA/SQL is designed to intercept requests from a desktop, determine where the data resides and translate the request into a format that can be read by the database.

## Netview makes move toward broader corporate role

BY ELIZABETH HORWITT  
CW STAFF

IBM's Netview took a couple of giant strides toward becoming a truly multivendor enterprise-wide network management system last week—and a few baby steps as well.

Several important enhancements for Netview Version 2 Release 2 are in the works, IBM said. However, no shipment date has been set.

Foremost is the long-awaited meshing of IBM's two graphics-based network management workstation programs, Graphics Monitor Facility (GMF) and Netcenter. GMF will be IBM's official offering, depicting enterprise-wide network activity via topological maps and icons based on Systems Application Architecture (SAA)-compliant protocols, IBM said. It will also gain Netcenter's ability to depict non-Systems Network Architecture (SNA) network devices.

A second planned enhancement is Resource Object Data Manager, an object-oriented clearinghouse for real-time information about the status and configuration of IBM and non-IBM networks. Right now, Netview principally gathers configuration information from VTAM tables, said David Passmore, a partner at Ernst & Young. "That was fine as long as you were just managing an SNA network," he said.

The Manager will be able to feed up-to-date configuration and status information to GMF. A key feature is an open application programming interface that facilitates integration with third-party management applications, said Bill Warner, IBM's director of network management. The Manager will eventually supersede existing Netview data tables and become the Systemsview configuration information base, he said.

One Netview shop, CSX

Corp., is leery of such far-off announcements that lack concrete "drop-in" solutions, according to Doug Underhill, an assistant vice president at the transport firm. The new Manager "doesn't do any management for you by virtue of an interface; you can't just write a few Rexx programs" to do configuration management, he added.

### Other announcements

IBM did announce Network Configuration Application/MVS, which is said to feed configuration information about equipment, circuits and software to Resource Object Data Manager.

IBM also announced LAN Management Utilities/2, OS/2-based software that "provides Netview with a view into non-SNA OS/2 workstations on the LAN," IBM spokesman Denny Corbin said.

Such products partially address Underhill's request for two-way communications that

enable Netview to "go downstream (to non-SNA devices) and cause some action."

However, Netview's functionality is still far from competing with that of third-party local-area network management systems, said Randy Condon, a LAN analyst at Nestles Beverage Co. "Netview has no way to pick out meaningful information from a LAN, even using a filter."

IBM also announced products designed to extend mainframe services to non-IBM LAN products such as Novell, Inc.'s Netware (see story page 1).

The company did not neglect the networking standards note. IBM said that its SAA Common Communications Support component will support Integrated Services Digital Network Basic and Primary Rate Interfaces. This will expand IBM support beyond the present, announced Application System/400 and Personal System/2 products to all SAA systems at an undi-

closed level, IBM said.

IBM also announced that Advanced Communications Function/Network Control Program Version 6 will support Ethernet and frame relay. This, coupled with hardware boards announced earlier this year, will allow 3745 front ends to interconnect Ethernet and Transmission Control Protocol/Internet Protocol networks over a frame relay-based SNA backbone.

However, users want to interconnect their LANs via IBM 3174 controllers, not front ends. IBM has announced no frame relay for the 3174, Passmore pointed out.

Still missing from the standard picture is native Netview support for Open Systems Interconnect network management protocols. IBM still has no time frame for delivering on this long-standing direction, Warner said. Inside wraps right now, he added, is IBM's "Netview for AIX," the joint project with Hewlett-Packard Co. to develop a LAN-interconnect management system on the RISC System/6000.

## Open systems

FROM PAGE 1

network management products needed to make this open server a reality are on 1992 delivery schedules. In a few cases, IBM said it would announce availability dates next year.

Nonetheless, some customers said the real meaning behind the announcement lies not in the specific products but in the fact that the strategy should give them more choices when selecting products in the future.

"This reinforces our decision to go forward with [non-IBM] open systems," said Michael Prince, director of information systems at Burlington Coat Factory Co. "We can pick hardware and software based on features, price and hardware."

**I**BM IS "moving in the right direction. I just don't... know if they are going to follow through."

JOHN WOOD  
ROYAL BANK OF CANADA

He said IBM's move makes it possible for Burlington Coat Factory to "look to IBM for new products more than before because they're adopting the technology we're standardizing on."

While Prince and other users were impressed with IBM's plan, it is critical for IBM to get customers to buy their products that support this strategy. As of last week, many customers said it was too early to determine how they will respond to the IBM product set.

"They are saying the right things and moving in the right direction," said John Wood, vice president of computer and network services at the Royal Bank of Canada. "I just don't have a good enough sense for what IBM's announced products to know if they are going to follow through."

IBM has been redefining the mainframe for more than a year in response to industry changes, starting in mid-1991, when IBM announced a concept for the mainframe to perform several

different server functions. At the same time, many customers have been looking to information systems strategies that either diminish the traditional mainframe or cancel it out altogether.

Industry analysts give IBM high marks for its open systems plan, although some also characterized the announcement as a desperate act designed to keep mainframe sales going.

"It's clear that unless they can be open, they are going to lose customers, and they know it," said Judith Harwitz, a vice president at Patricia Seybold's Office Computing Group. "Overall, it's a positive sign, but their future depends on pulling this off. IBM is fighting for its life."

**New a survival tactic**  
IBM executives last week dismissed claims that the announcement is a survival tactic. Instead, they called it a continuation of their commitment to open systems, which has included support of Unix and other industry standards.

"This is not a way for us to sell ourselves," said William Grabe, an IBM vice president and general manager of marketing and services. "This is not a last-gasp effort."

Carl Conti, an IBM senior vice president and general manager of Enterprise Systems, said that while some observers may not see the mainframe as open, there are several initiatives under way to make that happen. He pointed to the various Systems Application Architecture frameworks, such as the Systems Application Architecture and Systemview, that rely on third-party development and technology, as examples. He also noted that the company's first implementation of the OS/1 operating system will be on a mainframe.

With last week's announcements, two primary strategies for openness emerged: IBM is extending its reach to industry standards and bringing such specifications as Posix to its product line. At the same time, it is providing its own standards and architectures to the industry for adoption.

Last week, its distributed database architecture won the support of several third-party database companies, which IBM once thought of only as "the enemy," according to Conti.

## IBM crawls to Unix on host

Users pleased with promise of mainframe AIX, but delivery is yet to come

BY JOHANNA AMBROSIO  
CW STAFF

As part of its move toward open systems, IBM announced last week a mainframe version of its Unix-based operating system and support for the Posix interface standard across its major hardware platforms.

Users will have to wait for some time to use these announcements to fruition, however. The AIX/ESA operating system, IBM's first native implementation of AIX on a mainframe, will be delivered in stages beginning in the second quarter of next year. Further details about availability will be released by March, the company said. IBM also repeated its promise to deliver an OS/1-based version of AIX for the RISC System/6000 midrange systems but did not say when that would happen.

In addition, IBM said it will add Posix compliance to

MVS/ESA and the OS/400 operating systems within two years. IBM's AIX operating system already supports Posix. The company's move to Posix is important, analysts said, as the basis for moving its proprietary systems toward a more standards-based world.

### Users all for it

Users gave the announcements a general thumbs-up. "It sure would be nice to have the same operating system on the mainframe that you do on the RS/6000," said Dave Corley, assistant vice president of investment systems at Mutual of New York in Purchase, N.Y. "It's not something that we need right now, but it helps lend credibility to what they're doing."

Lester Marcus, coordinator of the New York/New Jersey AIX Users Group, said these moves represent a "positive step in IBM's open systems direction." He said users are espe-

cially looking forward to AIX/ESA, "although we need further details about the implementation."

Mike Saragat, assistant general manager of system structure and management in IBM's Programming Systems line of business, said the mainframe AIX would be most likely to appeal to users in the scientific/technical communities or in governmental agencies who are looking for a way to expand their Unix applications.

AIX/ESA will be based on the Open Software Foundation's OS/1 and will run either native or as a guest under VM. The operating system will also support these areas:

- The Enterprise Systems Connection.
- The OSF's Distributed Computing Environment.
- The High-Performance Parallel Interface.
- PR/SM, multiprocessing and 2M-byte address spaces.

## AD/Cycle support structure offered

BY JOHANNA AMBROSIO  
CW STAFF

**NEW YORK** — IBM attempted to show the most in its AD/Cycle framework last week by announcing 25 new products and the enhancement of 14 others. Among them is the first product under the AD/Cycle banner for developing applications that run jointly on the mainframe and its workstation.

"For those who have been asking, 'Where's the beef?' with AD/Cycle, dinner is now served," said Earl F. Wheeler, IBM senior vice president and general manager of Programming Systems.

Analysts agreed that this announcement was intended less to demonstrate any significant new strategic direction than to show that IBM is serious about filling in the AD/Cycle product line.

Gerrard Gorchew, vice president of American Management Systems, Inc., said these could spur use of AD/Cycle, which he

### Selected third-party additions to AD/Cycle

**Bachman Information Systems, Inc.:** The Bachman/DMA Repository Services will allow in database designs and models to be shared with other tools via IBM Repository Manager.

**Interwove, Inc.:** Announced additional IBM OS/2 versions of the Excelsior series of front-end tools.

**Knowledgeware, Inc.:** An expanded ADW/Repository Environment Facility allows increased integration with IBM Repository Manager.

**Micro Focus, Inc.:** An extended version of its Cobol/2 Workbench will have a new front end compliant with IBM's Common User Access specifications.

**Synco:** Announced the Synco/CSF Environment Facility, a tool that generates RPG/400 or Cobol/400 source code.

CW Staff Janet Greenberg

said has been suffering, like most computer-aided software engineering products, from customers' reluctance to invest money in unproven technology.

Among the significant moves are the following:

- A common language development and execution environment for use across Systems Application Architecture platforms that standardizes different components such as routines.
- New versions of the Cross-System Product for MVS and OS/2, which allow users to develop applications that are split between the host and workstations.
- A new AD/Cycle business partner, Digital, which makes the Smalltalk object-oriented programming language. This marks IBM's first object-oriented announcement under the AD/Cycle banner.
- A new category of business

partner, the International Alliance, whose members will play a "significant" role in developing AD/Cycle and whose products will be marketed worldwide by IBM. Members include Bachman Information Systems, Inc., Micro Focus Ltd., Synco Corp., Digital, Interwove, Inc., Easel Corp., Knowledgeware, Inc. and Systematic Ltd.

• New products or new releases of existing products from many of the AD/Cycle business partners, several of which announced a higher level of integration among their tool sets and with Repository Manager.

• AD/Cycle Workstations Platform, common services that help integrate tools within AD/Cycle.

• A new release of Dictionary Model Transformer to assist users in migrating to the Repository from IBM's OS/VS DED/DC Data Dictionary.

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# WYSIWYG

## DOS Re Mi Fa So La Ti DOS

The *Funniest Computer Songs* is a compilation of 12 songs including showstoppers such as the Engineer's Rap, Killer Byte Blues; and Do It Yourself (You Can Build a Mainframe from the Things You Have at Home). Available from Vince Emery Productions, P.O. Box 460279, San Francisco, Calif. 94146.



## Quips & Quotes

### Hold the mayo

"I'm a software company — if the consumer wants software on a piece of lettuce, I'll put it on a piece of lettuce." — Trip Hawkins, chairman of Electronic Arts, Inc., on developing for multiple platforms

► Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Zottola or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

Source: Media Age magazine (May 1992); Understanding Computers (Time Life Books, Inc.); 1991 Computer Industry Almanac; Monthly Labor Review

## MUD SLINGING

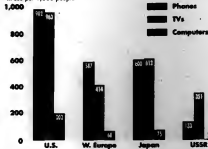
Developers in the Product Integration Group at Computer Associates are referred to internally as PIGs; their work is known as PIGware.



## Communication by nation

The U.S. has the highest number of phones, televisions and computers per capita than any other country

In use per 1,000 people



## From our reader file

"A user was having a problem with a Lotus file. I asked him to send a copy of the CON.SYS file and AUTOEXEC.BAT file on a floppy so we could figure out the problem for him. The user promptly went to the copier, meticulously cut the floppy disk case down the side, copied side one and side two of the round disk that's inside and sent the copy to me. He couldn't figure out why we couldn't read it." Tony Kozis, Network Manager, Eaton Corp., Milwaukee, Wis.

## Computers, bedpans & temps

Top 5 industries with fastest growing employment 1988-2000

- 1 Computer and DP services
- 2 Outpatient facilities and health services
- 3 Personal supply services
- 4 Water and sanitation
- 5 Residential care



## Did you know?

The term "robots" was first used in 1920 in Czechoslovakian dramatist Karel Capek's play R.U.R. (Rossum's Universal Robots). Capek extracted the now-common name for automation from "robota," the Czech word for work. The humanoid mechanical servants in his drama rebelled and destroyed their human masters.

## INSIDE LINES

### Surprise victory party for Banyan

► Networking company Banyan Systems has reportedly been selected to supply technology it didn't even submit to the Open Software Foundation for the OSF's Distributed Management Environment (DME). Apparently, Banyan purchased technology dubbed "Network Leger" from original submitter Wang that handles the event manager portion of the DME framework. Network Leger performs such administrative functions as system log-in and alarm reporting and will be integrated with many other vendors' framework and application technologies to form DME, a vendor-neutral platform for system and network management to be announced tomorrow. Banyan was up against proposals from such vendors as DEC, British Telecom and a joint Group Bull/Siemens submission.

### Talk fast, it's digital

► Will ISDN phase frame relay be greater than the sum of its parts? Northern Telecom thinks so, and customers can decide when they witness a demonstration of ISDN and frame relay working in concert in NTT's booth at Interop '91 in San Jose, Calif., next month. Sources within the firm and NTT will announce the ability of the two emerging wide-area networking technologies to integrate and provide nonnetworked desktops at small corporate sites with dial-up access

to public frame-relay backbones through local Basic Rate ISDN services.

### Worst kept secret

► Wordperfect does intend to ship a Windows version of its word processor sometime this year. The folks at Wordperfect have kept us informed every step of the way. As if that weren't enough, they launched a contest to guess the exact ship date. And now, Wordperfect Publishing Corp. will premier Wordperfect for Windows Magazine in January 1992. It will feature tutorials, tips and user stories.

### Worst kept secret II

► Perhaps because it's months behind Lotus, Borland isn't trying too hard to keep its Quattro Pro for Windows a secret. But we hear it's worth waiting for. Quattro Pro for Windows will include Borland's flashy "Menus on Demand" technology. Point to a cell, column, icon or whatever, click the right mouse button, and you get a custom menu of functions for that object. There's also a "notebook" concept in which each spreadsheet file can have up to 256 spreadsheet pages. The spreadsheets are multidimensional, and here's the best part: Pages can have long names. So your first-quarter West Coast sales report doesn't have to be abbreviated QWCALS anymore.

### Layoff as hits Prime Info

► Prime Computer has swung into layoff mode with a vengeance. According to sources, the company re-

cently laid off a significant portion of its sales force and field support staff and has slashed R&D employees as well. Perhaps most interesting is that the firm has made substantial reductions in the Prime Information database software area — a product previously touted as one of the few bright lights on Prime's horizon. Approximately one-third of Prime's installed user base relies on the Pick-like database software system.

### Like a bad penny

► The hacker community went underground deeper than usual following Operation Sundev, last year's federal and state crackdown on illegal computer access and tampering. Now that it appears that the law enforcement campaign is on the skids, the hackers are back in action. Bolder than ever, a source told us last week. The Legion of Doom, the notorious hacker group that has been the target of several investigations, has reformulated with new members and a new newsletter — and T-shirts, no less, our source said.

Betcha didn't know that Russia's Declaration of Independence was made possible by a pair of Seattle-area software firms. When Russian President Boris Yeltsin declared his defiance of the coup in the Soviet Union last month, he used a PC running Aldus Pagemaker as well as Microsoft's Word for Windows. We don't think Bill Gates is quite in the league of Thomas Jefferson, but it's still awfully impressive. If your news isn't too revealing, call it in to Executive Editor Paul Gilman at (800) 343-6474, and a fax to (508) 875-8831, or Compuuser him at 70537.2413.



And they weren't just any guys, either.

They were a group of editors from *PC Magazine*, and in their February 26th, 1991

**BEST WINDOWS 3.0  
3270 TERMINAL EMULATOR:  
IRMA WorkStation  
FOR WINDOWS V. 1.0.  
FEB. 26, 1991.**

issue, they had some awfully nice things to say about IRMA™ WorkStation for Windows.

Some comments:

"DCA's product is by far the most flexible that we've tested."

"Its flexibility, powerful scripting language, interface, and asynchronous abilities make it a top choice."

And, finally, "It's nice to see IRMA...out there again as the leader of the pack."

What did we do to deserve such plaudits?

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Mainframe applications are easier to use because of our QuickEdit™ and QuickPrint™ features.

or token-ring connections, as well as

# PC

## MAGAZINE

### EDITORS' CHOICE

# A few months ago, some guys came by and stuck this on our windows.

asynchronous connections.

You also get 3270 terminal, 3270 printer and asynchronous terminal emulations, and an extensive range of 3270 and asynchronous file transfer protocols, including DCA's and IBM's.

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advantage of IRMA WorkStation for Windows today.

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and we'll have a free demo disk to you in no time.

And after checking out the capabilities that made IRMA WorkStation for Windows the *PC Magazine* Editors' Choice, we think you'll be pretty stuck on our windows yourself.

**DCA**



# Which UNIX® RDBMS did Hewlett-Packard®, IBM®, Unisys®, Data General®, AT&T®, Sun®, and Sequent® choose to demonstrate the power of their latest UNIX Systems?

## Informix.



**IDC Study on UNIX OLTP**  
UNIX On-Line Transaction Processing at Multi-User UNIX Sites (January 1991) states that some 47.4% of sites running commercial applications on multi-user UNIX systems are running OLTP. The study reports that Informix is in use at more sites than any other DBMS for UNIX OLTP applications.



**About the TPC**  
The Transaction Processing Performance Council (TPC) was founded in 1988 to define transaction processing benchmarks and to provide performance data to the industry. Today, 40 hardware and software vendors, including AT&T, Bull, Sybase, Data General, DEC, ASK/Ingres, Fujitsu, IBM, Informix, Hewlett-Packard, NCR, Olivetti, Oracle, Pyramid, Sequent, Siemens, Sun, and Unisys are members.

Within the past five months, every one of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

### ► New TPC Benchmarks Used

In each case, the Transaction Processing Performance Council's rigorous TPC A and TPC B benchmarks—the new standard for comparing system and database performance—were used to highlight OLTP performance and database throughput.

### ► The Number 1 Choice for UNIX OLTP

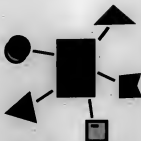
Informix is the number one UNIX OLTP choice. A January 1991 International Data Corporation (IDC) study shows that when it comes to UNIX OLTP applications, Informix products are installed at more than twice as many multi-user UNIX sites as our closest competitor. It's independent confirmation that thousands of companies worldwide rely on Informix-based OLTP solutions every day.

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**Data management for  
open systems.**